This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

St. Philips.

M. Philips.

£ s d ₰

Q
113
R94
1800

ESSAYS,

POLITICAL, ECONOMICAL,

AND

PHILOSOPHICAL.

By BENJAMIN Count of RUMFORD,

KNIGHT OF THE ORDERS OF THE WHITE EAGLE, AND ST. STANISLAUS; *Chamberlain, Privy Counſellor of State, and Lieutenant-General in the Service of his Moſt Serene Highneſs the* Elector Palatine, *Reigning* Duke *of* Bavaria; *Colonel of his Regiment of Artillery, and Commander in Chief of the General Staff of his Army*; F. R. S. Acad. R. Hiber. Berol. Elec. Boicæ. Palat. et Amer. Soc.

THE FIFTH EDITION.

VOL. I.

LONDON:

Printed by A. Strahan, Printers-Street,

FOR T. CADELL JUN. AND W. DAVIES, STRAND.

1800.

Librarian
Allen
7-18-28
17635
3 vols.

TO

HIS MOST SERENE HIGHNESS

THE ELECTOR PALATINE,

REIGNING DUKE OF BAVARIA,

&c. &c. &c.

SIR,

IN requeſting permiſſion to dedicate to your moſt Serene Electoral Highneſs theſe Eſſays, I had ſeveral important objects in view: I was deſirous of ſhowing to the world that I had not preſumed to publiſh an

an account of public meaſures and inſtitutions, planned and executed in your Electoral Highneſs's dominions,—by your orders,—and under your immediate authority and protection, without your leave and approbation. I was alſo deſirous of availing myſelf of the illuſtrious name of a Sovereign eminently diſtinguiſhed by his munificence in promoting uſeful knowledge, and by his ſolicitude for the happineſs and proſperity of his ſubjects, to recommend the important objects I have undertaken to inveſtigate, to the attention of the Great,—the Wiſe,—and the Benevolent. And laſtly, I was anxious to have an opportunity of teſtifying, in a public manner, my gratitude to your moſt Serene Electoral Highneſs for all your kindneſs to me; and more eſpecially for the diſtinguiſhed honour you have done me by ſelecting and employing me

as

as an inſtrument in your hands of doing good.

I have the honour to be, with the moſt profound reſpect, and with unalterable attachment,

SIR,

Your Moſt Serene ELECTORAL HIGHNESS's

Devoted Servant,

RUMFORD.

LONDON,
July 1ſt, 1796.

CONTENTS

OF THE

FIRST ESSAY.

INTRODUCTION.

SITUATION of the Author in the Service of His Moſt Serene Highneſs the ELECTOR PALATINE, *Reigning Duke of* BAVARIA.—*Reaſons which induced him to undertake to form an Eſtabliſhment for the Relief of the Poor.* - - Page 3

CHAP. I.

Of the Prevalence of Mendicity in Bavaria at the Time when the Meaſures for putting an End to it were adopted. - - - 14.

CHAP. II.

Various Preparations made for putting an End to Mendicity in Bavaria.—Cantonment of the

CONTENTS

Cavalry in the Country Towns and Villages.—Formation of the Committee placed at the Head of the Inſtitution for the Poor at Munich.—The Funds of that Inſtitution. - Page 21

CHAP. III.

Preparations made for giving Employment to the Poor.—Difficulties attending that Undertaking.—The Meaſures adopted completely ſucceſsful.—The Poor reclaimed to Habits of uſeful Induſtry.—Deſcription of the Houſe of Induſtry at Munich. - - - 32

CHAP. IV.

An Account of the taking up of the Beggars at Munich.—The Inhabitants are called upon for their Aſſiſtance.—General Subſcription for the Relief and Support of the Poor.—All other public and private Collections for the Poor aboliſhed.

CHAP. V.

The different Kinds of Employment given to the Beggars upon their being aſſembled in the Houſe of Induſtry.—Their great Awkwardneſs at firſt.—Their Docility, and their Progreſs in uſeful Induſtry.—The Manner in which they were treated.—The Manner in which they were fed.—

The

The Precautions uſed to prevent Abuſes in the Public Kitchen from which they were fed. Page 51

CHAP. VI.

Apology for the Want of Method in treating the Subject under Conſideration.—Of the various Means uſed for encouraging Induſtry among the Poor.—Of the internal Arrangement and Government of the Houſe of Induſtry.—Why called the Military Work-houſe.—Of the Manner in which the Buſineſs is carried on there.—Of the various Means uſed for preventing Frauds in carrying on the Buſineſs in the different Manufactures.—Of the flouriſhing State of thoſe Manufactures. - - - - - 67

CHAP. VII.

A farther Account of the Poor who were brought together in the Houſe of Induſtry:—And of the intereſting change which was produced in their Manners and Diſpoſitions.—Various Proofs that the Means uſed for making them induſtrious, comfortable, and happy, were ſucceſsful. - 87

CHAP. VIII.

Of the Means uſed for the Relief of thoſe poor Perſons who were not Beggars.—Of the large Sums of Money diſtributed to the Poor in Alms.—Of the Means uſed for rendering thoſe who received Alms induſtrious.—Of the general Utility of the Houſe of Induſtry to the Poor, and the Diſtreſſed of

all Denominations.—Of Public Kitchens for feeding the Poor, united with Eſtabliſhments for giving them Employment; and of the great Advantages which would be derived from forming them in every Pariſh.—Of the Manner in which the Poor of Munich are lodged. - - Page 95

CHAP. IX.

Of the Means uſed for extending the Influence of the Inſtitution for the Poor at Munich, to other Parts of Bavaria.—Of the Progreſs which ſome of the Improvements introduced at Munich are making in other Countries. - - 106

CONTENTS

OF THE

SECOND ESSAY.

CHAP. I.

General View of the Subject.—Deplorable State of thoſe who are reduced to Poverty.—No Body of Laws can be ſo framed as to provide effectually for their wants.—Only adequate Relief that can be afforded them muſt be derived from the voluntary Aſſiſtance of the Humane and Benevolent.—How that Aſſiſtance is to be ſecured.—Objections to the Expence of taking care of the Poor anſwered.—Of the Means of introducing a Scheme for the Relief of the Poor. - - - - Page 115

CHAP. II.

Of the Extent of an Eſtabliſhment for the Poor.—Of the Diviſion of a Town or City into Diſtricts.

tricts.—Of the Manner of carrying on the Buſineſs of a public Eſtabliſhment for the Poor.—Of the Neceſſity of numbering all the Houſes in a Town where an Eſtabliſhment for the Poor is formed. - - - - Page 125

CHAP. III.

General Direction of the Affairs of an Inſtitution for the Poor attended with no great Trouble.—Of the beſt Method of carrying on the current Buſineſs, and of the great Uſe of printed Forms, or Blanks.—Of the neceſſary Qualifications of thoſe who are placed at the Head of an Eſtabliſhment for the Relief of the Poor.—Great Importance of this Subject.—Cruelty and Impolicy of putting the Poor into the Hands of Perſons they cannot reſpect and love.—The Perſons pointed out who are more immediately called upon to come forward with Schemes for the Relief of the Poor, and to give their active Aſſiſtance in carrying them into Effect. - - - 132

CHAP. IV.

Of the Neceſſity of effectual Meaſures for introducing a Spirit of Induſtry among the Poor in forming an Eſtabliſhment for their Relief and Support.—Of the Means which may be uſed for that Purpoſe; and for ſetting on foot a Scheme for

of the SECOND ESSAY.

for-forming an Eſtabliſhment for feeding the Poor. - - Page 144

CHAP. V.

Of the Means which may be uſed by Individuals in affluent Circumſtances for the Relief of the Poor in their Neighbourhood. - 164

CONTENTS

OF THE

THIRD ESSAY.

Introduction. - - Page 191

CHAP. I.

Great Importance of the Subject under Conſideration.—Probability that Water acts a much more important Part in Nutrition than has hitherto been generally imagined.—Surpriſingly ſmall Quantity of ſolid Food neceſſary, when properly prepared, for all the purpoſes of Nutrition.—Great Importance of the Art of Cookery, Barley remarkably nutritive when properly prepared.—The Importance of culinary Proceſſes for preparing Food ſhown from the known Utility of a Practice common in ſome Parts of Germany of Cooking for Cattle.—Difficulty of introducing a Change of Cookery into common Uſe.—Means that may be employed for that Purpoſe. - - 193

CONTENTS

CHAP. II.

Of the Pleaſure of Eating, and of the Means that may be employed for increaſing it. Page 206

CHAP. III.

Of the different Kinds of Food furniſhed to the Poor in the Houſe of Induſtry at Munich, with an Account of the Coſt of them.—Of the Expence of providing the ſame Kinds of Food in Great Britain, as well at the preſent high Prices of Proviſions, as at the ordinary Prices of them.—Of the various Improvements of which theſe different Kinds of cheap Food are capable. - 209

CHAP. IV.

Of the ſmall Expence at which the Bavarian Soldiers are fed.—Details of their Housekeeping, founded on actual Experiment.—An Account of the Fuel expended by them in Cooking. - - 223

CHAP. V.

Of the great Importance of making Soldiers eat together in regular Meſſes.—The Influence of ſuch economical Arrangements extends even to the moral Character of thoſe who are the Objects of them.—Of the Expence of Feeding Soldiers in Meſſes.—

of the THIRD ESSAY.

Meſſes.—Of the ſurpriſing ſmallneſs of the Expence of feeding the Poor at Munich.—Specific Propoſals reſpecting the feeding of the Poor in Great Britain, with Calculations of the Expence, at the preſent Prices of Proviſions. Page 241

CHAP. VI.

Of INDIAN CORN.—*It affords the cheapeſt and moſt nouriſhing Food known.—Proofs that it is more nouriſhing than Rice.—Different Ways of preparing or cooking it.—Computation of the Expence of feeding a Perſon with it, founded on Experiment.—Approved Reçeipt for making an* INDIAN PUDDING. - - - 248

CHAP. VII.

Receipts for preparing various Kinds of cheap Food.—Of MACCARONI.—*Of* POTATOES.—*Approved Receipts for boiling Potatoes.—Of Potatoe Puddings.—Of Potatoe Dumplins.—Of boiled Potatoes with a Sauce.—Of Potatoe Sallad.—Of* BARLEY—*Is much more nutritious than Wheat.—Barley Meal, a good Subſtitute for Pearl Barley, for making Soups.—General Directions for preparing cheap Soups.—Receipt for the cheapeſt Soup that can be made.—Of* SAMP—*Method of preparing it—Is an excellent Subſtitute for Bread.—Of brown Soup.—Of* RYE BREAD. - 278

CONTENTS, &c.

CHAP. II.

Practical Directions designed for the Use of Workmen, showing how they are to proceed in making the Alterations necessary to improve Chimney Fire-places, and effectually to cure smoking Chimnies. - - - Page 331

CHAP. III.

Of the Cause of the Ascent of Smoke.—Illustration of the Subject by familiar Comparisons and Experiments.—Of Chimnies which affect and cause each other to smoke.—Of Chimnies which smoke from Want of Air.—Of the Eddies of Wind which sometimes blow down Chimnies, and cause them to smoke. - - - - 364

EXPLANATION of the FIGURES. - 378

CONTENTS

OF THE

FIFTH ESSAY.

A SHORT Account of the Military Academy at Munich. - - Page 391

An Account of the Means uſed to improve the Breed of Horſes, and Horned Cattle, in Bavaria and the Palatinate. - - - 395

An Account of the Meaſures adopted for putting an End to Uſury at Munich. - - 403

An Account of a Scheme for employing the Soldiery in Bavaria in repairing the Highways and Public Roads. - - - 406

APPENDIX.

CONTENTS

APPENDIX.

N° I.

Addreſs and Petition to all the Inhabitants and Citizens of Munich, in the Name of the real Poor and Diſtreſſed. - - Page 411

N° II.

Subſcription Liſts diſtributed among the Inhabitants of Munich, in the Month of January 1790, *when the Eſtabliſhment for the Relief of the Poor in that City was formed.* - - - 422

N° III.

An Account of the Receipts and Expenditures of the Inſtitution for the Poor at Munich during Five Years. - - - 428

N° IV.

Certificate relative to the Expence of Fuel in the Public Kitchen at the Military Workhouſe at Munich. - - - 432

N° V.

Printed Form for the Deſcriptions of the Poor. 433

of the FIFTH ESSAY.

N° VI.

Printed Form for Spin-Tickets, such as are used at the Military Workhouse at Munich Page 436

An improved Form for a Spin-Ticket, with its Abstract; which Abstract is to be cut off from the Ticket, and fastened to the Bundle of Yarn or Thread. - - - 437

N° VII.

An Account of Experiments made at the Bakehouse of the Military Workhouse at Munich, November the 4th and 5th, 1794. - - 438

N° VIII.

Account of the Persons in the House of Industry in Dublin the 30*th April* 1796, *and of the Details of the Manner and Expence of feeding them.* 453

N° IX.

An Account of an Experiment made (under the Direction of the Author) in the Kitchen of the House of Industry at Dublin, in Cooking for the Poor. 458

AN

ACCOUNT

OF AN

ESTABLISHMENT FOR THE POOR

AT MUNICH.

TOGETHER WITH

A Detail of various Public Meaſures, connected with that Inſtitution, which have been adopted and carried into effect for putting an End to Mendicity, and introducing Order, and uſeful Induſtry, among the more Indigent of the Inhabitants of BAVARIA.

View of the Military Work-house at Munich.

INTRODUCTION.

Situation of the Author in the Service of His Moſt Serene Highneſs the ELECTOR PALATINE, *Reigning Duke of* BAVARIA. *Reaſons which induced him to undertake to form an Eſtabliſhment for the Relief of the Poor.*

AMONG the viciſſitudes of a life chequered by a great variety of incidents, and in which I have been called upon to act in many intereſting ſcenes, I have had an opportunity of employing my attention upon a ſubject of great importance; a ſubject intimately and inſeparably connected with the happineſs and well-being of all civil ſocieties; and which, from its nature, cannot fail to intereſt every

benevolent mind;—it is the providing for the wants of the Poor, and ſecuring their happineſs and comfort by the introduction of order and induſtry among them.

The ſubject, though it is ſo highly intereſting to mankind, has not yet been inveſtigated with that ſucceſs that could have been wiſhed. This fact is apparent, not only from the prevalence of indolence, miſery, and beggary, in almoſt all the countries of Europe: but alſo from the great variety of opinion among thoſe who have taken the matter into ſerious conſideration, and have propoſed methods for remedying thoſe evils; ſo generally and ſo juſtly complained of.

What I have to offer upon this ſubject being not merely ſpeculative opinion, but the genuine reſult of actual experiments; of experiments made upon a very large ſcale, and under circumſtances which render them peculiarly intereſting; I cannot help flattering myſelf that my readers will find both amuſement, and uſeful information, from the peruſal of the following ſheets.

As it may perhaps appear extraordinary that a military man ſhould undertake a work ſo foreign to his profeſſion, as that of forming and executing a plan for providing for the Poor, I have thought it not improper to preface the narrative of my operations, by a ſhort account of the motives which induced me to engage in this undertaking. And in order to throw ſtill more light upon the whole tranſaction, I ſhall begin with a few words of myſelf, of my ſituation in the country in which I reſide,

I reſide, and of the different objects which were had in view in the various public meaſures in which I have been concerned. This information is neceſſary in order to form a clear idea of the circumſtances under which the operations in queſtion were undertaken, and of the connection which ſubſiſted between the different public meaſures which were adopted at the ſame time.

Having in the year 1784, with His Majeſty's gracious permiſſion, engaged myſelf in the ſervice of His Moſt Serene Highneſs the Elector Palatine, Reigning Duke of Bavaria, I have ſince been employed by his Electoral Highneſs in various public ſervices, and particularly in arranging his military affairs, and introducing a new ſyſtem of order, diſcipline, and œconomy among his troops.

In the execution of this commiſſion, ever mindful of that great and important truth, that no political arrangement can be really good, except in ſo far as it contributes to the general good of ſociety, I have endeavoured in all my operations to unite the intereſt of the ſoldier with the intereſt of civil ſociety, and to render the military force, even in time of peace, ſubſervient to the *public good.*

To facilitate and promote theſe important objects;—to eſtabliſh a reſpectable ſtanding military force, which ſhould do the leaſt poſſible harm to the population, morals, manufactures, and agriculture of the country,—it was neceſſary to make ſoldiers citizens, and citizens ſoldiers. To this end the ſituation of the ſoldier was made as eaſy, comfortable, and eligible as poſſible; his pay was

increaſed, he was comfortably, and even elegantly clothed, and he was allowed every kind of liberty not inconſiſtent with good order and due ſubordination; his military exerciſes were ſimplified, his inſtruction rendered ſhort and eaſy, and all obſolete and uſeleſs cuſtoms and uſages were baniſhed from the ſervice. Great attention was paid to the neatneſs and cleanlineſs of the ſoldiers' barracks and quarters; and which extended even to the external appearance of the buildings; and nothing was left undone, that could tend to make the men comfortable in their dwellings. Schools were eſtabliſhed in all the regiments, for inſtructing the ſoldiers in reading, writing, and arithmetic; and into theſe ſchools, not only the ſoldiers and their children, but alſo the children of the neighbouring citizens and peaſants, were admitted *gratis*, and even ſchool-books, paper *, pens, and ink, were furniſhed for them, at the expence of the Sovereign.

Beſides theſe ſchools of inſtruction, others, called ſchools of induſtry, were eſtabliſhed in the regiments, where the ſoldiers and their children were taught various kinds of work, and from which they were ſupplied with raw materials, to work for their own emolument.

As nothing is ſo certainly fatal to morals, and particularly to the morals of the lower claſs of mankind, as *habitual idleneſs*, every poſſible mea-

* This paper, as it could afterwards be made uſe of for making cartridges, in fact coſt nothing.

ſure

ſure was adopted, that could be deviſed, to introduce *a ſpirit of induſtry* among the troops. Every encouragement was given to the ſoldiers to employ their leiſure time, when they were off duty, in working for their own emolument; and among other encouragements the moſt efficacious of all, that of allowing them full liberty to diſpoſe of the money acquired by their labour in any way they ſhould think proper, without being obliged to give any account of it to any body. They were even furniſhed with working dreſſes, (a canvas frock and trouſers,) *gratis*, at their enliſting, and were afterwards permitted to retain their old uniforms for the ſame purpoſe; and care was taken in all caſes where they were employed, that they ſhould be well paid.

They commonly received from ſixteen to eighteen creutzers * a-day for their labour; and with this they had the advantage of being clothed and lodged, and, in many caſes, of receiving their full pay of five creutzers, and a pound and a half (1 lb. 13½ oz. Avoirdupois) of bread per day from the Sovereign. When they did their duty in their regiments, by mounting guard regularly according to their *tour*, (which commonly was every fourth day,) and only worked thoſe days they happened to be off guard, in that caſe, they received their full pay; but when they were excuſed from regimental duty, and permitted to work every day for their own emolument, their pay (at five creutzers

* A creutzer is $\frac{11}{12}$ of an Engliſh penny.

per day) was ſtopped, but they were ſtill permitted to receive their bread, and to lodge in the barracks.

In all public works, ſuch as making and repairing highways,—draining marſhes,—repairing the banks of rivers, &c. ſoldiers were employed as labourers; and in all ſuch caſes, the greateſt care was taken to provide for their comfortable ſubſiſtence, and even for their amuſement. Good lodgings were prepared for them, and good and wholeſome food at a reaſonable price; and the greateſt care was taken of them when they happened to fall ſick.

Frequently, when conſiderable numbers of them were at work together, a band of muſic was ordered to play to them while at work; and on holidays they were permitted, and even encouraged, to make merry, with dancing and other innocent ſports and amuſements.

To preſerve good order and harmony among thoſe who were detached upon theſe working parties, a certain proportion of officers and non-commiſſioned officers were always ſent with them, and thoſe commonly ſerved as overſeers of the works, and as ſuch were paid.

Beſides this permiſſion to work for hire in the garriſon towns, and upon detached working parties, which was readily granted to all thoſe who deſired it, or at leaſt to as many as could poſſibly be ſpared from the neceſſary ſervice of the garriſon; every facility and encouragement was given to the ſoldier who was a native of the country, and who

had a family or friends to go to, or private concerns to take care of, to go home on furlough, and to remain abſent from his regiment from one annual exerciſe to the other, that is to ſay, ten months and a half each year. This arrangement was very advantageous to the agriculture and manufactures, and even to the population of the country, (for the ſoldiers were allowed to marry,) and ſerved not a little to the eſtabliſhment of harmony and a friendly intercourſe between the ſoldiers and the peaſantry, and to facilitate recruiting.

Another meaſure which tended much to render the ſituation of the ſoldier pleaſant and agreeable, and to facilitate the recruiting ſervice, was the rendering the garriſons of the regiments permanent. This meaſure might not be adviſable in a deſpotic, or odious government; for where the authority of the Sovereign muſt be ſupported by the terror of arms, all habits of ſocial intercourſe and friendſhip between the ſoldiers and the ſubjects muſt be dangerous; but in all well-regulated governments, ſuch friendly intercourſe is attended with many advantages.

A peaſant would more readily conſent to his ſon's engaging himſelf to ſerve as a ſoldier in a regiment permanently ſtationed in his neighbourhood, than in one at a great diſtance, or whoſe deſtination was uncertain; and when the ſtation of a regiment is permanent, and it receives its recruits from the diſtrict of country immediately ſurrounding its head-quarters, the men who go home

home on furlough have but a ſhort journey to make, and are eaſily aſſembled in caſe of any emergency; and it was the more neceſſary to give every facility to the ſoldiers to go home on furlough in Bavaria, as labourers are ſo very ſcarce in that country that the huſbandman would not be able without them to cultivate his ground.

The habits of induſtry and of order which the ſoldier acquired when in garriſon, rendered him ſo much the more uſeful as a labourer when on furlough; but not contented with merely furniſhing labourers for the aſſiſtance of the huſbandman, I was deſirous of making uſe of the army, as a means of introducing uſeful improvements into the country.

Though agriculture is carried to the higheſt perfection in ſome parts of the Elector's dominions, yet in others, and particularly in Bavaria, it is ſtill much behind-hand. Very few of the new improvements in that art, ſuch as the introduction of new and uſeful plants—the cultivation of clover and of turnips—the regular ſucceſſion of crops, &c. have yet found their way into general practice in that country; and even *the potatoe*, that moſt uſeful of all the products of the ground, is ſcarcely known there.

It was principally with a view to introduce the culture of potatoes in that country that the military gardens were formed. Theſe gardens (of which there is one in every garriſon belonging to the Elector's dominions, Duſſeldorf and Amberg only excepted)

excepted *) are pieces of ground, in, or adjoining to the garriſon towns, which are regularly laid out, and excluſively appropriated to the uſe of the non-commiſſioned officers and private ſoldiers belonging to the regiments in garriſon. The ground is regularly divided into diſtricts of regiments, battalions, companies, and corporalities, *(corporalſchafts,)* of which laſt diviſions there are four to each company; and the quantity of ground allotted to each corporality is ſuch that each man belonging to it, whether non-commiſſioned officer or private, has a bed 365 ſquare feet in ſuperficies.

This piece of ground remains his ſole property as long as he continues to ſerve in the regiment, and he is at full liberty to cultivate it in any way, and to diſpoſe of the produce of it in any manner he may think proper. He muſt however cultivate it, and plant it, and keep it neat and free from weeds; otherwiſe, if he ſhould be idle, and neglect it, it would be taken from him and given to one of his more induſtrious comrades.

The diviſions of theſe military gardens are marked by broader and ſmaller alleys, covered with gravel, and neatly kept; and in order that every one who chooſes it, may be a ſpectator of this intereſting ſcene of induſtry, all the principal alleys, which are made large for that purpoſe, are always open as a public walk. The effect which this eſtabliſhment has already produced in the

* Partieular local reaſons, which it is not neceſſary here to explain, have hitherto prevented the eſtabliſhment of military gardens in theſe two garriſon towns.

ſhort

ſhort time (little more than five years) ſince it was begun, is very ſtriking, and much greater and more important than I could have expected.

The ſoldiers, from being the moſt indolent of mortals, and from having very little knowledge of gardening, or of the produce of a garden, for uſe, are now become induſtrious and ſkilful cultivators, and they are grown ſo fond of vegetables, particularly of potatoes, which they raiſe in great quantities, that theſe uſeful and wholeſome productions now conſtitute a very eſſential part of their daily food. And theſe improvements are alſo ſpreading very faſt among the farmers and peaſants, throughout the whole country. There is hardly a ſoldier that goes on furlough, or that returns home at the expiration of his time of ſervice, that does not carry with him a few potatoes for planting, and a little collection of garden-ſeeds; and I have no doubt but in a very few years we ſhall ſee potatoes as much cultivated in Bavaria as in other countries; and that the uſe of vegetables for food will be generally introduced among the common people. I have already had the ſatisfaction to ſee little gardens here and there making their appearance, in different parts of the country, and I hope that very ſoon no farmer's houſe will be found without one.

To aſſiſt the ſoldiers in the cultivation of their gardens, they are furniſhed with garden utenſils *gratis;* they are likewiſe furniſhed from time to time with a certain quantity of manure, and with an aſſortment of garden-ſeeds; but they do not rely

rely ſolely upon theſe ſupplies; thoſe who are induſtrious collect materials in their barracks, and in the ſtreets, for making manure, and even ſometimes purchaſe it, and they raiſe in their own gardens moſt of the garden-ſeeds they ſtand in need of. To enable them to avail themſelves of their gardens as early in the ſpring as poſſible, in ſupplying their tables with green vegetables, each company is furniſhed with a hot-bed for raiſing early plants.

To attach the ſoldiers more ſtrongly to theſe their little poſſeſſions, by increaſing their comfort and convenience in the cultivation and enjoyment of them, a number of little ſummer-houſes, or rather huts, one to each company, have been erected for the purpoſe of ſhelter, where they can retire when it rains, or when they are fatigued.

All the officers of the regiments, from the higheſt to the loweſt, are ordered to give the men every aſſiſtance in the cultivation of theſe their gardens; but they are forbidden, upon pain of the ſevereſt puniſhment, to appropriate to themſelves any part of the produce of them, or even to receive any part of it in preſents.

CHAP. I.

Of the Prevalence of Mendicity in Bavaria at the Time when the Meaſures for putting an End to it were adopted.

AMONG the various meaſures that occurred to me by which the military eſtabliſhment of the country might be made ſubſervient to the public good in time of peace, none appeared to be of ſo much importance as that of employing the army, in clearing the country of beggars, thieves, and other vagabonds; and in watching over the public tranquillity.

But in order to clear the country of beggars, (the number of whom in Bavaria had become quite intolerable,) it was neceſſary to adopt general and efficacious meaſures for maintaining and ſupporting the Poor. Laws were not wanting to oblige each community in the country to provide for its own Poor; but theſe laws had been ſo long neglected, and beggary had become ſo general, that extraordinary meaſures, and the moſt indefatigable exertions were neceſſary to put a ſtop to this evil.

The number of itinerant beggars, of both ſexes, and all ages, as well foreigners as natives, who ſtrolled about the country in all directions, levying contributions from the induſtrious inhabitants, ſtealing and robbing, and leading a life of indolence,

lence, and the moſt ſhameleſs debauchery, was quite incredible; and ſo numerous were the ſwarms of beggars in all the great towns, and particularly in the capital, ſo great their impudence, and ſo perſevering their importunity, that it was almoſt impoſſible to croſs the ſtreets without being attacked, and abſolutely forced to ſatisfy their clamorous demands. And theſe beggars were in general by no means ſuch as from age or bodily infirmities were unable by their labour to earn their livelihood; but they were for the moſt part, ſtout, ſtrong, healthy, ſturdy beggars, who, loſt to every ſenſe of ſhame, had embraced the profeſſion from choice, not neceſſity; and who, not unfrequently, added inſolence and threats to their importunity, and extorted that from fear which they could not procure by their arts of diſſimulation.

Theſe beggars not only infeſted all the ſtreets, public walks, and public places, but they even made a practice of going into private houſes, where they never failed to ſteal whatever fell in their way, if they found the doors open, and nobody at home; and the churches were ſo full of them that it was quite a nuiſance, and a public ſcandal during the performance of divine ſervice. People at their devotions were continually interrupted by them, and were frequently obliged to ſatisfy their demands in order to be permitted to finiſh their prayers in peace and quiet.

In ſhort, theſe deteſtable vermin ſwarmed every where; and not only their impudence and clamorous

and I have been aſſured, that the wages they received from their employers were often regulated accordingly. The children in every country village, and thoſe even of the beſt farmers, made a conſtant practice of begging from all ſtrangers who paſſed; and one hardly ever met a perſon on foot upon the road, particularly a woman, who did not hold out her hand and aſk for charity.

In the great towns, beſides the children of the poorer ſort, who almoſt all made a cuſtom of begging, the profeſſional beggars formed a diſtinct claſs, or *caſt*, among the inhabitants; and in general a very numerous one. There was even a kind of political connection between the members of this formidable body; and certain general maxims were adopted, and regulations obſerved, in the warfare they carried on againſt the public. Each beggar had his particular beat, or diſtrict, in the poſſeſſion of which it was not thought lawful to diſturb him; and certain rules were obſerved in diſpoſing of the diſtricts in caſe of vacancies by deaths or reſignations, promotions or removals. A battle, it is true, frequently decided the conteſt between the candidates; but when the poſſeſſion was once obtained, whether by force of arms, or by any other means, the right was ever after conſidered as indiſputable. Alliances by marriage were by no means uncommon in this community; and, ſtrange as it may appear, means were found to procure legal permiſſion from the civil magiſtrates for the celebration of theſe nuptials! The children were of courſe trained up in the

the profeſſion of their parents; and having the advantage of an early education, were commonly great proficients in their trade.

As there is no very eſſential difference between depriving a perſon of his property by ſtealth, and extorting it from him againſt his will by dint of clamorous importunity, or under falſe pretence of feigned diſtreſs and misfortune; ſo the tranſition from begging to ſtealing is not only eaſy, but perfectly natural. That total inſenſibility to ſhame, and all thoſe other qualifications which are neceſſary in the profeſſion of a beggar, are likewiſe eſſential to form an accompliſhed thief; and both theſe profeſſions derive very conſiderable advantages from their union. A beggar who goes about from houſe to houſe to aſk for alms, has many opportunities to ſteal, which another would not ſo eaſily find; and his profeſſion as a beggar gives him a great facility in diſpoſing of what he ſteals; for he can always ſay it was given him in charity. No wonder then that thieving and robbing ſhould be prevalent where beggars are numerous.

That this was the caſe in Bavaria will not be doubted by thoſe who are informed that in the four years immediately ſucceeding the introduction of the meaſures adopted for putting an end to mendicity, and clearing the country of beggars, thieves, robbers, &c. above *ten thouſand* of theſe vagabonds, foreigners and natives, were actually arreſted and delivered over to the civil magiſtrates; and that in taking up the beggars in Munich, and providing for thoſe who ſtood in need of public

aſſiſtance, no leſs than 2600 of the one deſcription and the other, were entered upon the liſts in one week; though the whole number of the inhabitants of the city of Munich probably does not amount to more than 60,000, even including the ſuburbs.

Theſe facts are ſo very extraordinary, that were they not notorious, I ſhould hardly have ventured to mention them, for fear of being ſuſpected of exaggeration; but they are perfectly known in the country, by every body; having been publiſhed by authority in the news-papers at the time, with all their various details and ſpecifications, for the information of the public.

What has been ſaid will, I fancy, be thought quite ſufficient to ſhew the neceſſity of applying a remedy to the evils deſcribed; and of introducing order and a ſpirit of induſtry among the lower claſſes of the people. I ſhall therefore proceed, without any farther preface, to give an account of the meaſures which were adopted and carried into execution for that purpoſe.

CHAP. II.

Various Preparations made for putting an End to Mendicity in Bavaria.—Cantonment of the Cavalry in the Country Towns and Villages.—Formation of the Committee placed at the Head of the Inſtitution for the Poor at Munich.—The Funds of that Inſtitution.

As ſoon as it was determined to undertake this great and difficult work, and the plan of operations was finally ſettled, various preparations were made for its execution.

The firſt preliminary ſtep taken, was to canton four regiments of cavalry in Bavaria and the adjoining provinces, in ſuch a manner that not only every conſiderable town was furniſhed with a detachment, but moſt of the large villages were occupied; and in every part of the country ſmall parties of threes, fours, and fives, were ſo ſtationed; at the diſtance of one, two, and three leagues from each other; that they could eaſily perform their daily patroles from one ſtation to another in the courſe of the day, without ever being obliged to ſtop at a peaſant's houſe, or even at an inn, or ever to demand forage for their horſes, or victuals for themſelves, or lodgings, from any perſon whatever.

This arrangement of quarters prevented all diſputes between the military and the people of the country. The head-quarters of each regiment, where the commanding officer of the regiment reſided, was eſtabliſhed in a central ſituation with reſpect to the extent of country occupied by the regiment; each ſquadron had its commanding officer in the centre of its diſtrict,—and the ſubalterns and non-commiſſioned officers were ſo diſtributed in the different cantonments, that the privates were continually under the inſpection of their ſuperiors, who had orders to keep a watchful eye over them; —to viſit them in their quarters very often;—and to preſerve the ſtricteſt order and diſcipline among them.

To command theſe troops, a general officer was named, who, after viſiting every cantonment in the whole country, took up his reſidence at Munich.

Printed inſtructions were given to the officer, or non-commiſſioned officer, who commanded a detached poſt, or patrole;—regular monthly returns were ordered to be made to the commanding officers of the regiment, by the officers commanding ſquadrons;—to the commanding general, by the officers commanding regiments;—and by the commanding general, to the council of war, and to the Sovereign.

To prevent diſputes between the military and the civil authorities, and, as far as poſſible, to remove all grounds of jealouſy and ill-will between them; as alſo to preſerve peace and harmony between the ſoldiery and the inhabitants,

bitants, theſe troops were ſtrictly ordered and enjoined to behave on all occaſions to magiſtrates and other perſons in civil authority with the utmoſt reſpect and deference;—to conduct themſelves towards the peaſants and other inhabitants in the moſt peaceable and friendly manner;—to retire to their quarters very early in the evening;—and above all, cautiouſly to avoid diſputes and quarrels with the people of the country. They were alſo ordered to be very diligent and alert in making their daily patroles from one ſtation to another;—to apprehend all thieves and other vagabonds that infeſted the country, and deliver them over to the civil magiſtrates;—to apprehend deſerters, and conduct them from ſtation to ſtation to their regiments;—to conduct all priſoners from one part of the country to another;—to aſſiſt the civil magiſtrate in the execution of the laws, and in preſerving peace and order in the country, in all caſes where they ſhould be legally called upon for that purpoſe;—to perform the duty of meſſengers in carrying government diſpatches and orders, civil as well as military, in caſes of emergency;—and to bring accounts to the capital, by expreſs, of every extraordinary event of importance that happens in the country;—to guard the frontiers, and aſſiſt the officers of the revenue in preventing ſmuggling;—to have a watchful eye over all ſoldiers on furlough in the country, and when guilty of exceſſes, to apprehend them and tranſport them to their regiments;—to aſſiſt the inhabitants in caſe of fire, and particularly to

guard their effects, and prevent their being loſt or ſtolen, in the confuſion which commonly takes place on thoſe occaſions; to purſue and apprehend all thieves, robbers, murderers, and other malefactors;—and in general, to lend their aſſiſtance on all occaſions where they could be uſeful in maintaining peace, order, and tranquillity in the country.

As the Sovereign had an undoubted right to quarter his troops upon the inhabitants when they were employed for the police and defence of the country, they were on this occaſion called upon to provide quarters for the men diſtributed in theſe cantonments; but in order to make this burden as light as poſſible to the inhabitants, they were only called upon to provide quarters for the *non-commiſſioned officers* and *privates;* and inſtead of being obliged to take *theſe* into their houſes, and to furniſh them with victuals and lodgings, as had formerly been the practice, (and which was certainly a great hardſhip,) a ſmall houſe or barrack for the men, with ſtabling adjoining to it for the horſes, was built, or proper lodgings were hired by the civil magiſtrate, in each of theſe military ſtations, and the expence was levied upon the inhabitants at large. The forage for the horſes was provided by the regiments, or by contractors employed for that purpoſe; and the men, being furniſhed with a certain allowance of fire-wood, and the neceſſary articles of kitchen furniture, were made to provide for their own ſubſiſtence, by purchaſing their

proviſions

proviſions at the markets, and cooking their victuals in their own quarters.

The officers provided their own lodgings and ſtabling, being allowed a certain ſum for that purpoſe, in addition to their ordinary pay.

The whole of the additional expence to the military cheſt for the eſtabliſhment and ſupport of theſe cantonments, amounted to a mere trifle; and the burden upon the people, which attended the furniſhing of quarters for the non-commiſſioned officers and privates, was very inconſiderable, and bore no proportion to the advantages derived from the protection and ſecurity to their perſons and properties afforded by theſe troops *.

Not only this cantonment of the cavalry was carried into execution as a preliminary meaſure to the taking up of the beggars in the capital, but many other preparatives were alſo made for that undertaking.

As conſiderable ſums were neceſſary for the ſupport of ſuch of the poor as, from age or other bodily infirmities, were unable by their induſtry to provide for their own ſubſiſtence; and as there were no public funds any way adequate to ſuch an expence, which could be applied to this uſe, the ſucceſs of the meaſure depended entirely upon the voluntary ſubſcriptions of the inhabitants; and in order to induce theſe to ſubſcribe liberally, it was neceſſary to ſecure their approbation of the plan, and their confidence in

* The whole amount of this burden was not more than 30,000 florins, or about 2727 l. ſterling a year.

thoſe who were choſen to carry it into execution. And as the number of beggars was ſo great in Munich, and their importunity ſo very troubleſome, there could have been no doubt but any ſenſible plan for remedying this evil would have been gladly received by the public; but they had been ſo often diſappointed by fruitleſs attempts from time to time made for that purpoſe, that they began to think the enterpriſe quite impoſſible, and to conſider every propoſal for providing for the poor, and preventing mendicity, as a mere job.

Aware of this, I took my meaſures accordingly. To convince the public that the ſcheme was feaſible, I determined firſt, by a great exertion, to carry it into complete execution, and *then* to aſk them to ſupport it. And to ſecure their confidence in thoſe employed in the management of it, perſons of the higheſt rank, and moſt reſpectable character were choſen to ſuperintend and direct the affairs of the inſtitution; and every meaſure was taken that could be deviſed to prevent abuſes.

Two principal objects were to be attended to, in making theſe arrangements: the firſt was to furniſh ſuitable employment to ſuch of the poor as were able to work; and the ſecond, to provide the neceſſary aſſiſtance for thoſe who, from age, ſickneſs, or other bodily infirmities, were unable by their induſtry to provide for themſelves. A general ſyſtem of police was likewiſe neceſſary among this claſs of miſerable beings; as well as meaſures for reclaiming them, and making them uſeful ſubjects.

The police of the poor, as alſo the diſtribution of alms, and all the œconomical details of the inſtitution, were put under the direction of a committee, compoſed of the preſident of the council of war,—the preſident of the council of ſupreme regency,—the preſident of the eccleſiaſtical council,—and the preſident of the chamber of finances; and to aſſiſt them in this work, each of the above-mentioned preſidents was accompanied by one counſellor of his reſpective department, at his own choice; who was preſent at all the meetings of the committee, and who performed the more laborious parts of the buſineſs. This committee, which was called *The Armen Inſtituts Deputation*, had convenient apartments fitted up for its meetings; a ſecretary, clerk, and accountant, were appointed to it; and the ordinary guards of the police were put under its immediate direction.

Neither the preſidents nor the counſellors belonging to this committee received any pay or emolument whatever for this ſervice, but took upon themſelves this trouble merely from motives of humanity, and a generous deſire to promote the public good; and even the ſecretary, and other inferior officers employed in this buſineſs, received their pay immediately from the Treaſury; or from ſome other department; and *not from the funds deſtined for the relief of the poor:* and in order moſt effectually to remove all ſuſpicion with reſpect to the management of this buſineſs, and the faithful application of the money deſtined for the poor,

poor, inſtead of appointing a treaſurer to the committee, a public banker of the town, a moſt reſpectable citizen *, was named to receive and pay all monies belonging to the inſtitution, upon the written orders of the committee; and exact and detailed accounts of all monies received and expended were ordered to be printed every three months, and diſtributed *gratis* among the inhabitants.

In order that every citizen might have it in his power to aſſure himſelf that the accounts were exact, and that the ſums expended were *bonâ fide* given to the poor in alms, the money was publicly diſtributed every Saturday in the town-hall, in the preſence of a number of deputies choſen from among the citizens themſelves; and an alphabetical liſt of the poor who received alms;—in which was mentioned the weekly ſum each perſon received;—and the place of his or her abode, was hung up in the hall for public inſpection.

But this was not all. In order to fix the confidence of the public upon the moſt firm and immoveable baſis, and to engage their good will and cheerful aſſiſtance in ſupport of the meaſures adopted, the citizens were invited to take an active and honourable part in the execution of the plan, and in the direction of its moſt intereſting details.

The town of Munich, which contains about 60,000 inhabitants, had been formerly divided into *four quarters*. Each of theſe was now ſub-

* Monſ. Dallarmi.

divided

divided into *four diſtricts*, making in all *ſixteen diſtricts*; and all the dwelling-houſes, from the palace of the Sovereign to the meaneſt hovel, were regularly numbered, and inſcribed in printed liſts provided for that purpoſe.

For the inſpection of the poor in each diſtrict, a reſpectable citizen was choſen, who was called the commiſſary of the diſtrict, *(abtheilungs commiſſaire,)* and for his aſſiſtants, a *prieſt*; a *phyſician*; a *ſurgeon*; and an *apothecary*; all of whom, including the *commiſſary*, undertook this ſervice without fee or reward, from mere motives of humanity and true patriotiſm. The apothecary was ſimply reimburſed the original coſt of the medicines he furniſhed.

To give more weight and dignity to the office of commiſſary of a diſtrict, one of theſe commiſſaries, in rotation, was called to aſſiſt at the meetings of the ſupreme committee; and all applications for alms were ſubmitted to the commiſſaries for their opinion; or, more properly, all ſuch applications went through them to the committee. They were likewiſe particularly charged with the inſpection and police of the poor in their ſeveral diſtricts.

When a perſon already upon the poor liſt, or any other, in diſtreſs, ſtood in need of aſſiſtance, he applied to the commiſſary of his diſtrict, who, after viſiting him, and inquiring into the circumſtances of his caſe, afforded him ſuch immediate aſſiſtance as was abſolutely neceſſary; or otherwiſe, if the caſe was ſuch as to admit of the delay, he recommended him to the attention

attention of the committee, and waited for their orders. If the poor perſon was ſick, or wounded, he was carried to ſome hoſpital; or the phyſician, or ſurgeon of the diſtrict was ſent for, and a nurſe provided to take care of him in his lodgings. If he grew worſe, and appeared to draw near his end, the prieſt was ſent for, to afford him ſuch ſpiritual aſſiſtance as he might require; and if he died, he was decently buried. After his death, the commiſſary aſſiſted at the inventory which was taken of his effects, a copy of which inventory was delivered over to the committee. Theſe effects were afterwards ſold;—and after deducting the amount of the different ſums received in alms from the inſtitution by the deceaſed during his lifetime, and the amount of the expences of his illneſs and funeral, the remainder, if any, was delivered over to his lawful heirs; but when theſe effects were inſufficient for thoſe purpoſes; or when no effects were to be found, the ſurplus in the one caſe, and the whole of theſe expences in the other, was borne by the funds of the inſtitution.

Theſe funds were derived from the following ſources, viz.

Firſt, from ſtated monthly allowances, from the Sovereign out of his private purſe,—from the ſtates,—and from the treaſury, or chamber of finances.

Secondly, and principally, from the voluntary ſubſcription of the inhabitants.

Thirdly, from legacies left to the inſtitution; and

Fourthly,

Fourthly, from ſeveral ſmall revenues ariſing from certain tolls, fines, &c. which were appropriated to that uſe *.

Several other, and ſome of them very conſiderable *public* funds, originally deſigned by their founders for the relief of the poor, might have been taken and appropriated to this purpoſe; but, as ſome of theſe foundations had been miſapplied, and others nearly ruined by bad management, it would have been a very diſagreeable taſk to wreſt them out of the hands of thoſe who had the adminiſtration of them: and I therefore judged it moſt prudent not to meddle with them, avoiding, by that means, a great deal of oppoſition to the execution of my plan.

* The annual amount of theſe various receipts may be ſeen in the accounts publiſhed in the Appendix.

CHAP. III.

Preparations made for giving Employment to the Poor.—Difficulties attending that Undertaking.—The Meaſures adopted completely ſucceſsful.—The Poor reclaimed to Habits of uſeful Induſtry.—Deſcription of the Houſe of Induſtry at Munich.

BEFORE I proceed to give a more particular account of the funds of this inſtitution, and of the application of them, it will be neceſſary to mention the preparations which were made for furniſhing employment to the poor, and the means which were uſed for reclaiming them from their vicious habits, and rendering them induſtrious and uſeful ſubjects. And this was certainly the moſt difficult, as well as the moſt curious and intereſting part of the undertaking.

To truſt raw materials in the hands of common beggars, certainly required great caution and management;—but to produce ſo total and radical a change in the morals, manners, and cuſtoms of this debauched and abandoned race, as was neceſſary to render them orderly and uſeful members of ſociety, will naturally be conſidered as an arduous, if not impoſſible, enterpriſe. In this I ſucceeded;—for the proof of this fact I appeal to the flouriſhing ſtate of the different manufactories in which

which theſe poor people are now employed,—to their orderly and peaceable demeanour—to their cheerfulneſs,—to their induſtry,—to the deſire to excel, which manifeſts itſelf among them upon all occaſions,—and to the very air of their countenances.

Strangers, who go to ſee this inſtitution, (and there are very few who paſs through Munich who do not take that trouble,) cannot ſufficiently expreſs their ſurpriſe at the air of happineſs and contentment which reigns throughout every part of this extenſive eſtabliſhment, and can hardly be perſuaded, that among thoſe they ſee ſo cheerfully engaged in that intereſting ſcene of induſtry, by far the greater part were, five years ago, the moſt miſerable and moſt worthleſs of beings,—common beggars in the ſtreets.

An account of the means employed in bringing about this change cannot fail to be intereſting to every benevolent mind;—and this is what has encouraged me to lay theſe details before the public.

By far the greater number of the poor people to be taken care of were not only common beggars, but had been bred up from their very infancy in that profeſſion; and were ſo attached to their indolent and diſſolute way of living, as to prefer it to all other ſituations. They were not only unacquainted with all kinds of work, but had the moſt inſuperable averſion to honeſt labour; and had been ſo long familiarized with every crime, that they had become perfectly callous to all ſenſe of ſhame and remorſe.

With perſons of this deſcription, it is eaſy to be conceived that precepts;—admonitions;—and

puniſhments, would be of little or no avail. But where precepts fail, *habits* may ſometimes be ſucceſsful.

To make vicious and abandoned people happy, it has generally been ſuppoſed neceſſary, *firſt*, to make them virtuous. But why not reverſe this order?—Why not make them firſt *happy*, and then virtuous?—If happineſs and virtue be *inſeparable*, the end will be as certainly obtained by the one method as by the other; and it is moſt undoubtedly much eaſier to contribute to the happineſs and comfort of perſons in a ſtate of poverty and miſery, than, by admonitions and puniſhments, to reform their morals.

Deeply ſtruck with the importance of this truth, all my meaſures were taken accordingly. Every thing was done that could be deviſed to make the poor people I had to deal with comfortable and happy in their new ſituation; and my hopes, that a habit of enjoying the real comforts and conveniences which were provided for them, would in time, ſoften their hearts;—open their eyes;—and render them *grateful* and *docile*, were not diſappointed.

The pleaſure I have had in the ſucceſs of this experiment is much eaſier to be conceived than deſcribed. Would to God that my ſucceſs might encourage others to follow my example! If it were generally known how little trouble, and how little expence, are required to do much good, the heart-felt ſatisfaction which ariſes from relieving the wants, and promoting the happineſs of our fellow-creatures, is ſo great, that I am perſuaded,

acts of the moſt eſſential charity would be much more frequent, and the maſs of miſery among mankind would conſequently be much leſſened.

Having taken my reſolution to make the *comfort* of the poor people, who were to be provided for, the primary object of my attention, I conſidered what circumſtance in life,—after the neceſſaries, food and raiment,—contributes moſt to comfort, and I found it to be *cleanlineſs*. And ſo very extenſive is the influence of cleanlineſs, that it reaches even to the brute creation.

With what care and attention do the feathered race waſh themſelves and put their plumage in order; and how perfectly neat, clean and elegant do they ever appear! Among the beaſts of the field we find that thoſe which are the moſt cleanly are generally the moſt gay and cheerful; or are diſtinguiſhed by a certain air of tranquillity and contentment; and ſinging birds are always remarked for the neatneſs of their plumage. And ſo great is the effect of cleanlineſs upon man, that it extends even to his moral character. Virtue never dwelt long with filth and naſtineſs; nor do I believe there ever was a perſon *ſcrupulouſly attentive to cleanlineſs* who was a conſummate villain*.

* Almoſt all the great law-givers and founders of religions, from the remoteſt antiquity, ſeem to have been aware of the influence of cleanlineſs upon the moral character of man; and have ſtrongly inculcated it. In many caſes it has been interwoven with the moſt ſolemn rites of public and private worſhip, and is ſo ſtill in many countries. The idea that the ſoul is defiled and depraved by every thing *unclean*, or which defiles the body, has certainly prevailed in all ages; and has been particularly attended to by thoſe great benefactors of mankind, who, by the introduction of *peace* and *order* in ſociety, have laboured ſucceſsfully to promote the happineſs of their fellow-creatures.

Order and diſorder—peace and war—health and ſickneſs, cannot exiſt together; but *comfort* and *contentment*, the inſeparable companions of *happineſs* and *virtue*, can only ariſe from order, peace, and health.

Brute animals are evidently taught cleanlineſs by inſtinct; and can there be a ſtronger proof of its being eſſentially neceſſary to their well-being and happineſs?—But if cleanlineſs is neceſſary to the happineſs of brutes, how much more ſo muſt it be to the happineſs of the human race?

The good effects of cleanlineſs, or rather the bad effects of filth and naſtineſs, may, I think, be very ſatisfactorily accounted for. Our bodies are continually at war with whatever offends them, and every thing offends them that adheres to them, and irritates them;—and though by long habit we may be ſo accuſtomed to ſupport a phyſical ill, as to become almoſt inſenſible to it, yet it never leaves the mind perfectly at peace. There always remains a certain uneaſineſs and diſcontent;—an indeciſion, and an averſion from all ſerious application, which ſhows evidently that the mind is not at reſt.

Thoſe who from being afflicted with long and painful diſeaſe, ſuddenly acquire health, are beſt able to judge of the force of this reaſoning. It is by the delightful ſenſation they feel, at being relieved from pain and uneaſineſs, that they learn to know the full extent of their former miſery; and the human heart is never ſo effectually ſoftened, and ſo well prepared and diſpoſed to receive virtuous impreſſions, as upon ſuch occaſions.

It

It was with a view to bring the minds of the poor and unfortunate people I had to deal with to this ſtate, that I took ſo much pains to make them comfortable in their new ſituation. The ſtate in which they had been uſed to live was certainly moſt wretched and deplorable; but they had been ſo long accuſtomed to it, that they were grown inſenſible to their own miſery. It was therefore neceſſary, in order to awaken their attention, to make the contraſt between their former ſituation, and that which was prepared for them, as ſtriking as poſſible. To this end, every thing was done that could be deviſed to make them *really comfortable*.

Moſt of them had been uſed to living in the moſt miſerable hovels, in the midſt of vermin, and every kind of filthineſs; or to ſleep in the ſtreets, and under the hedges, half naked, and expoſed to all the inclemencies of the ſeaſons. A large and commodious building, fitted up in the neateſt and moſt comfortable mannner, was now provided for their reception.

In this agreeable retreat they found ſpacious and elegant apartments, kept with the moſt ſcrupulous neatneſs; well warmed in winter; and well lighted; a good warm dinner every day, *gratis*; cooked and ſerved up with all poſſible attention to order and cleanlineſs;—materials and utenſils for thoſe who were able to work;—maſters, *gratis*, for thoſe who required inſtruction;—the moſt generous pay, *in money*, for all the labour performed; and the kindeſt uſage from every perſon, from the higheſt to the loweſt, belonging to the eſtabliſhment.

Here, in this aſylum for the indigent and unfortunate, no ill uſage;—no harſh language, is permitted. During five years that the eſtabliſhment has exiſted, not a blow has been given to any one; not even to a child by his inſtructor.

As the rules and regulations for the preſervation of order are few, and eaſy to be obſerved, the inſtances of their being tranſgreſſed are rare; and as all the labour performed is paid by the piece; and not by the day; and is well paid; and as thoſe who gain the moſt by their work in the courſe of the week, receive proportional rewards on the Saturday evening; theſe are moſt effectual encouragements to induſtry.

But before I proceed to give an account of the internal economy of this eſtabliſhment, it will be neceſſary to deſcribe the building which was appropriated to this uſe; and the other local circumſtances, neceſſary to be known, in order to have a clear idea of the ſubject.

This building, which is very extenſive, is pleaſantly ſituated in the *Au*, one of the ſuburbs of the city of Munich. It had formerly been a manufactory, but for many years had been deſerted and falling to ruins. It was now completely repaired, and in part rebuilt. A large kitchen, with a large eating room adjoining it, and a commodious bake-houſe, were added to the buildings; and work-ſhops for carpenters; ſmiths; turners; and ſuch other mechanics as were conſtantly wanted in the manufactory for making and repairing the machinery were eſtabliſhed, and furniſhed with tools. Large halls were fitted up

for

for ſpinners of hemp;—for ſpinners of flax;—for ſpinners of cotton;—for ſpinners of wool;—and for ſpinners of worſted; and adjoining to each hall a ſmall room was fitted up for a clerk or inſpector of the hall, (*ſpin-ſchreiber*). This room, which was at the ſame time a ſtore-room, and counting-houſe, had a large window opening to the hall, from whence the ſpinners were ſupplied with raw materials;—where they delivered their yarn when ſpun;—and from whence they received an order upon the caſhier, ſigned by the clerk, for the amount of their labour.

Halls were likewiſe fitted up for weavers of woollens;—for weavers of ſerges and ſhalloons;—for linen weavers;—for weavers of cotton goods, and for ſtocking weavers;—and work-ſhops were provided for clothiers;—cloth ſhearers;—dyers;—ſadlers;—and rooms for wool-ſorters;—wool-carders;—wool-combers;—knitters;—ſempſtreſſes, &c. Magazines were fitted up as well for finiſhed manufactures, as for raw materials, and rooms for counting-houſes,—ſtore-rooms for the kitchen and bake-houſe,—and dwelling-rooms for the inſpectors and other officers who were lodged in the houſe.

A very ſpacious hall, 110 feet long, 37 feet wide, and 22 feet high, with many windows on both ſides, was fitted up as a drying-room; and in this hall tenters were placed for ſtretching out and drying eight pieces of cloth at once. This hall was ſo contrived as to ſerve for the dyer and for the clothier at the ſame time.

A fulling-mill was eſtabliſhed upon a ſtream of water which runs by one ſide of the court round

which the building is erected; and adjoining to the fulling-mill, is the dyers-ſhop; and the waſh-houſe.

This whole edifice, which is very extenſive, was fitted up, as has already been obſerved, in the neateſt manner poſſible. In doing this, even the external appearance of the building was attended to. It was handſomely painted; without, as well as within; and pains were taken to give it an air of *elegance*, as well as of neatneſs and cleanlineſs. A large court in the middle of the building was handſomely paved; and the ground before the building was levelled, and covered with gravel; and the approach to it from every ſide was made eaſy and commodious. Over the principal door, or rather gate, which fronts the ſtreet, is an inſcription, denoting the uſe to which the building is appropriated; and in the paſſage leading into the court, there is written in large letters of gold upon a black ground —"NO ALMS WILL BE RECEIVED HERE."

Upon coming into the court you ſee inſcriptions over all the doors upon the ground floor, leading to the different parts of the building. Theſe inſcriptions, which are all in letters of gold upon a black ground, denote the particular uſes to which the different apartments are deſtined.

This building having been got ready, and a ſufficient number of ſpinning-wheels, looms, and other utenſils made uſe of in the moſt common manufactures being provided; together with a ſufficient ſtock of raw materials, I proceeded to carry my plan into execution in the manner which will be related in the following Chapter.

CHAP. IV.

An Account of the taking up of the Beggars at Munich.—The Inhabitants are called upon for their Aſſiſtance.—General Subſcription for the Relief and Support of the Poor.—All other public and private Collections for the Poor aboliſhed.

NEW-YEAR'S-DAY having, from time immemorial, been conſidered in Bavaria as a day peculiarly ſet apart for giving alms; and the beggars never failing to be all out upon that occaſion; I choſe that moment as being the moſt favourable for beginning my operations.

Early in the morning of the firſt of January 1790, the officers and non-commiſſioned officers of the three regiments of infantry in garriſon, were ſtationed in the different ſtreets, where they were directed to wait for further orders.

Having, in the mean time, aſſembled, at my lodgings, the field-officers, and all the chief magiſtrates of the town, I made them acquainted with my intention to proceed that very morning to the execution of a plan I had formed for taking up the beggars, and providing for the poor; and aſked their immediate aſſiſtance.

To

To ſhow the public that it was not my wiſh to carry this meaſure into execution by military force alone, (which might have rendered the meaſure odious,) but that I was diſpoſed to ſhow all becoming deference to the civil authority, I begged the magiſtrates to accompany me, and the field-officers of the garriſon, in the execution of the firſt and moſt difficult part of the undertaking, that of arreſting the beggars. This they moſt readily conſented to, and we immediately ſallied out into the ſtreet, myſelf accompanied by the chief magiſtrate of the town, and each of the field-officers by an inferior magiſtrate.

We were hardly got into the ſtreet when we were accoſted by a beggar, who aſked us for alms.

I went up to him, and laying my hand gently upon his ſhoulder, told him, that from thenceforwards begging would not be permitted in Munich; —that if he really ſtood in need of aſſiſtance, (which would immediately be enquired into,) the neceſſary aſſiſtance ſhould certainly be given him, but that begging was forbidden; and if he was detected in it again he would be ſeverely puniſhed. I then delivered him over to an orderly ſerjeant who was following me, with directions to conduct him to the Town-hall, and deliver him into the hands of thoſe he ſhould find there to receive him; and then turning to the officers and magiſtrates who accompanied me, I begged they would take notice that I had myſelf, *with my own hands*, arreſted the firſt beggar we had met; and I requeſted them not only to follow my example themſelves, by arreſting

arreſting all the beggars they ſhould meet with, but that they would alſo endeavour to perſuade others, and particularly the officers, non-commiſſioned officers, and ſoldiers of the garriſon, that it was by no means derogatory to their character as ſoldiers, or in anywiſe diſgraceful to them, to aſſiſt in ſo *uſeful* and *laudable* an undertaking.

Theſe gentlemen having cheerfully and unanimouſly promiſed to do their utmoſt to ſecond me in this buſineſs, diſperſed into the different parts of the town, and with the aſſiſtance of the military, which they found every where waiting for orders, the town was ſo thoroughly cleared of beggars *in leſs than an hour*, that not one was to be found in the ſtreets.

Thoſe who were arreſted were conducted to the Town-hall, where their names were inſcribed in printed liſts provided for that purpoſe, and they were then diſmiſſed to their own lodgings, with directions to repair the next day to the newly erected "*Military Work-houſe*" in the Au; where they would find comfortable warm rooms;—a good warm dinner every day; and work for all thoſe who were in a condition to labour. They were likewiſe told that a commiſſion ſhould immediately be appointed to enquire into their circumſtances, and to grant them ſuch regular weekly allowances of money, in alms, as they ſhould ſtand in need of; which was accordingly done.

Orders were then iſſued to all the military guards in the different parts of the town, to ſend out patroles frequently into the ſtreets in their neighbourhood,

bourhood, to arreſt all the beggars they ſhould meet with; and a reward was offered for each beggar they ſhould arreſt and deliver over to the civil magiſtrate. The guard of the police was likewiſe directed to be vigilant; and the inhabitants at large, of all ranks and denominations, were earneſtly called upon to aſſiſt in completing a work of ſo much public utility, and which had been ſo happily begun *.

In an addreſs to the public, which was printed and diſtributed *gratis* among the inhabitants, the fatal conſequences ariſing from the prevalency of mendicity were deſcribed in the moſt lively and affecting colours,—and the manner pointed out in which they could moſt effectually aſſiſt in putting an end to an evil equally diſgraceful and prejudicial to ſociety.

As this addreſs, (which was written with great ſpirit, by a man well known in the literary world, Profeſſor Babo,) gives a very ſtriking and a very juſt picture of the character, manners, and cuſtoms, of the hordes of idle and diſſolute vagabonds which infeſted Munich at the time the meaſure in

* Upon this occaſion I muſt not forget to mention a curious circumſtance which contributed very much towards clearing the town effectually of beggars. It being found that ſome of the moſt hardened of theſe vagabonds were attempting to return to their old practices, and that they found means to eſcape the patroles, by keeping a ſharp look-out, and avoiding them; to hold them more effectually in check the patroles ſent out upon this ſervice were ordered to go without arms. In conſequence of this arrangement, the beggars being no longer able to diſtinguiſh who were in ſearch of them, and who were not, ſaw a patrole in every ſoldier they met with in the ſtreets, (and of theſe there were great numbers, Munich being a garriſon town,) and from thenceforward they were kept in awe.

queſtion

queſtion was adopted, and of the various artifices they made uſe of in carrying on their depredations; I have thought it might not be improper to annex it, at full length, in the Appendix, No. I.

This addreſs, which was preſented to all the heads of families in the city, and to many by myſelf, having gone round to the doors of moſt of the principal citizens for that purpoſe, was accompanied by printed liſts, in which the inhabitants were requeſted to ſet down their names;—places of abode;—and the ſums they choſe to contribute monthly, for the ſupport of the eſtabliſhment. Theſe liſts, (tranſlations of which are alſo inſerted in the Appendix, No. II.) were delivered to the heads of families, with duplicates, to the end that one copy being ſent in to the committee, the other might remain with the maſter of the family.

Theſe ſubſcriptions being *perfectly voluntary*, might be augmented or diminiſhed at pleaſure. When any perſon choſe to alter his ſubſcription, he ſent to the public office for two blank ſubſcription liſts, and filling them up anew, with ſuch alterations as he thought proper to make, he took up his old liſt at the office, and depoſited the new one in its ſtead.

The ſubſcription liſts being all collected, they were ſorted, and regularly entered according to the numbers of the houſes of the ſubſcribers, in ſixteen general liſts *, anſwering to the ſixteen ſubdiviſions

* Upon a new diviſion of the town, when the ſuburbs were included, the number of ſubdiviſions (*abtheilungs*) were augmented to *twenty-three*.

or

or diſtricts of the city; and a copy of the general liſt of each diſtrict was given to the commiſſary of the diſtrict.

Theſe copies, which were properly authenticated, ſerved for the direction of the commiſſary in collecting the ſubſcriptions in his diſtrict, which was done regularly the laſt Sunday morning of every month.

The amount of the collection was immediately delivered by the commiſſary into the hands of the banker of the inſtitution, for which he received two receipts from the banker; one of which he kept for his own juſtification, and the other he tranſmitted to the committee, with his report of the collection, which he was directed to ſend in as ſoon as the collection was made.

As there were ſome perſons who, from modeſty, or other motives, did not chooſe to have it known publickly how much they gave in alms to the poor, and on that account were not willing to have put down to their names upon the liſt of the ſubſcribers, the whole ſum they were deſirous of appropriating to that purpoſe; to accommodate matters to the peculiar delicacy of their feelings, the following arrangement was made, and carried into execution with great ſucceſs.

Thoſe who were deſirous of contributing privately to the relief of the poor, were notified by an advertiſement publiſhed in the news-papers, that they might ſend to the banker of the inſtitution any ſums for that purpoſe they might think proper, under any feigned name, or under any motto or other

other device; and that not only a receipt would be given to the bearer, for the amount, without any queſtions being aſked him, but, for greater ſecurity, a public acknowledgment of the receipt of the ſum would be publiſhed by the banker, with a mention of the feigned name or device under which it came, *in the next Munich Gazette.*

To accommodate thoſe who might be diſpoſed to give trifling ſums occaſionally, for the relief of the poor, and who did not chooſe to go or to ſend to the banker, fixed poor boxes were placed in all the churches, and moſt of the inns; coffee-houſes; and other places of public reſort; but nobody was ever called upon to put any thing into theſe boxes, nor was any poor's-box carried round, or any private collection or alms-gathering permitted to be made upon any occaſion, or under any pretence whatever.

When the inhabitants had ſubſcribed liberally to the ſupport of the inſtitution, it was but juſt to ſecure them from all further importunity in behalf of the poor. This was promiſed, and it was moſt effectually done; though not without ſome difficulty, and a very conſiderable expence to the eſtabliſhment.

The poor ſtudents in the Latin and German ſchools;—the ſiſters of the religious order of charity;—the directors of the hoſpital of lepers;—and ſome other public eſtabliſhments, had been ſo long in the habit of making collections, by going round among the inhabitants from houſe to houſe at ſtated periods, aſking alms, that they had acquired a ſort of

of right to levy thoſe periodical contributions, of which it was not thought prudent to diſpoſſeſs them without giving them an equivalent. And in order that this equivalent might not appear to be taken from the ſums ſubſcribed by the inhabitants for the ſupport of the poor, it was paid out of the monthly allowance which the inſtitution received from the chamber of finances, or public treaſury of the ſtate.

Beſides theſe periodical collections, there were others, ſtill more troubleſome to the inhabitants, from which it was neceſſary to free them; and ſome of theſe laſt were even ſanctioned by legal authority.

It is the cuſtom in Germany for apprentices in moſt of the mechanical trades, as ſoon as they have finiſhed their apprenticeſhips with their maſters, to travel, during three or four years, in the neighbouring countries and provinces, to perfect themſelves in their profeſſions by working as journeymen wherever they can find employment. When one of thoſe itinerant journeymen-tradeſmen comes into a town, and cannot find employment in it, he is conſidered *as having a right* to beg the aſſiſtance of the inhabitants, and particularly of thoſe of the trade he profeſſes, to enable him to go to the next town; and this aſſiſtance it was not thought juſt to refuſe. This cuſtom was not only very troubleſome to the inhabitants, but gave riſe to innumerable abuſes. Great numbers of idle vagabonds were continually ſtrolling about the country under the name of travelling journeymen-tradeſmen; and though any perſon, who preſented himſelf as ſuch in any ſtrange

place was obliged to produce (for his legitimation) a certificate from his laſt maſter, in whoſe ſervice he had been employed, yet ſuch certificates were ſo eaſily counterfeited, or obtained by fraud, that little reliance could be placed in them.

To remedy all theſe evils, the following arrangement was made: thoſe travelling journeymen-tradeſmen who arrive at Munich, and do not find employment, are obliged to quit the town immediately, or to repair to the military workhouſe, where they are either furniſhed with work, or a ſmall ſum is given them to enable them to purſue their journey farther.

Another arrangement by which the inhabitants have been relieved from much importunity, and by which a ſtop has been put to many abuſes, is the new regulation reſpecting thoſe who ſuffer by fire; ſuch ſufferers commonly obtain from government ſpecial permiſſion to make collections of charitable donations among the inhabitants in certain diſtricts, during a limited time. Inſtead of the permiſſion to make collections in the city of Munich, the ſufferers now receive certain ſums from the funds of the inſtitution for the poor. By this arrangement, not only the inhabitants are relieved from the importunity which always attends public collections of alms, but the ſufferers ſave a great deal of time, which they formerly ſpent in going about from houſe to houſe; and the ſale of theſe permiſſions to undertakers, and many other abuſes, but too frequent before this arrangement took place, are now prevented.

The detailed account publiſhed in the Appendix, No. III. of the receipts and expenditures of the inſtitution during five years, will ſhow the amount of the expence incurred in relieving the inhabitants from the various periodical and other collections before mentioned.

But not to loſe ſight too long of the moſt intereſting object of this eſtabliſhment, we muſt follow the people who were arreſted in the ſtreets, to the aſylum which was prepared for them, but which, no doubt, appeared to them at firſt a moſt odious priſon.

CHAP. V.

The different Kinds of Employment given to the Beggars upon their being aſſembled in the Houſe of Induſtry.—Their great Awkwardneſs at firſt.—Their Docility, and their Progreſs in uſeful Induſtry.—The Manner in which they were treated.—The Manner in which they were fed.—The Precautions uſed to prevent Abuſes in the Public Kitchen from which they were fed.

As by far the greater part of theſe poor creatures were totally unacquainted with every kind of uſeful labour, it was neceſſary to give them ſuch work, at firſt, as was very eaſy to be performed, and in which the raw materials were of little value; and then, by degrees, as they became more adroit, to employ them in manufacturing more valuable articles.

As hemp is a very cheap commodity, and as the ſpinning of hemp is eaſily learned, particularly when it is deſigned for very coarſe and ordinary manufactures, 15,000 pounds of that article were purchaſed in the palatinate, and tranſported to Munich; and ſeveral hundred ſpinning wheels, proper for ſpinning it, were provided; and ſeveral good ſpinners, as inſtructors, were engaged, and in readineſs, when this houſe of induſtry was opened for the reception of the poor.

Flax and wool were likewiſe provided, and ſome few good ſpinners of thoſe articles were engaged as inſtructors; but by far the greater number of the poor began with the ſpinning of hemp; and ſo great was their awkwardneſs at firſt, that they abſolutely ruined almoſt all the raw materials that were put into their hands. By an exact calculation of profit and loſs, it was found that the manufactory actually loſt more than 3000 florins upon the articles of hemp and flax, during the firſt three months: but we were not diſcouraged by theſe unfavourable beginnings; they were indeed eaſy to be foreſeen, conſidering the ſort of people we had to deal with, and how neceſſary it was to pay them at a very high rate for the little work they were able to perform, in order to keep up their courage, and induce them to perſevere with cheerfulneſs in acquiring more ſkill and addreſs in their labour.

If the eſtabliſhment was ſupported at ſome little expence in the beginning, it afterwards richly repaid theſe advantages, as will be ſeen in the ſequel of this account.

As the clothing of the army was the market upon which I principally depended, in diſpoſing of the manufactures which ſhould be made in the houſe, the woollen manufactory was an object moſt neceſſary to be attended to, and from which I expected to derive moſt advantage to the eſtabliſhment; but ſtill it was neceſſary to begin with the manufacture of hemp and flax, not only becauſe thoſe articles are leſs valuable than wool, and the loſs ariſing from their being ſpoiled by the awkwardneſs

wardneſs of beginners is of leſs conſequence, but alſo for another reaſon, which appears to me to be of ſo much importance as to require a particular explanation.

It was hinted above that it was found neceſſary, in order to encourage beginners in theſe induſtrious purſuits, to pay them at a very high rate for the little work they were able to perform; but every body knows that no manufacture can poſſibly ſubſiſt long, where exorbitant prices are paid for labour; and it is eaſy to conceive what diſcontent and diſguſt would be occaſioned among the workmen upon lowering the prices which had for a length of time been given for labour. By employing the poor people in queſtion at firſt in the manufactures of hemp and flax,—manufactures which were not intended to be carried on to any extent,—it was eaſy afterwards, when they had acquired a certain degree of addreſs in their work, to take them from theſe manufactures, and put them to ſpinning of wool, worſted, or cotton; care having been taken to fix the price of labour in theſe laſt-mentioned manufactures at a reaſonable rate.

The dropping of the manufacture of any particular article altogether, or purſuing it leſs extenſively, could produce no bad effect upon the general eſtabliſhment; but the lowering of the price of labour, in any inſtance, could not fail to produce many.

It is neceſſary, in an undertaking like this, cautiouſly to avoid every thing that could produce

diſcouragement and diſcontent among thoſe upon whoſe induſtry alone ſucceſs muſt depend.

It is eaſy to conceive that ſo great a number of unfortunate beings,—of all ages and ſexes—taken as it were out of their very element, and placed in a ſituation ſo perfectly new to them, could not fail to be productive of very intereſting ſituations.—Would to God I were able to do juſtice to this ſubject! but no language can deſcribe the affecting ſcenes to which I was a witneſs upon this occaſion.

The exquiſite delight which a ſenſible mind muſt feel, upon ſeeing many hundreds of wretched beings awaking from a ſtate of miſery and inactivity, as from a dream; and applying themſelves with cheerfulneſs to the employments of uſeful induſtry;—upon ſeeing the firſt dawn of placid content break upon a countenance covered with habitual gloom, and furrowed and diſtorted by miſery;—this is eaſier to be conceived than deſcribed.

During the firſt three or four days that theſe poor people were aſſembled, it was not poſſible entirely to prevent confuſion: there was nothing like mutinous reſiſtance among them; but their ſituation was ſo new to them, and they were ſo very awkward in it, that it was difficult to bring them into any tolerable order. At length, however, by diſtributing them in the different halls, and aſſigning to each his particular place, (the places being all diſtinguiſhed by numbers,) they were brought into ſuch order as to enable the inſpectors, and inſtructors, to begin their operations.

Thoſe

Thoſe who underſtood any kind of work, were placed in the apartments where the work they underſtood was carried on; and the others, being claſſed according to their ſexes, and, as much as poſſible, according to their ages, were placed under the immediate care of the different inſtructors. By much the larger number were put to ſpinning of hemp;—others, and particularly the young children from four to ſeven years of age, were taught to knit, and to ſew; and the moſt awkward among the men, and particularly the old, the lame, and the infirm, were put to carding of wool. Old women, whoſe ſight was too weak to ſpin, or whoſe hands trembled with palſy, were made to ſpool yarn for the weavers; and young children, who were too weak to labour, were placed upon ſeats erected for that purpoſe round the rooms where other children worked.

As it was winter, fires were kept in every part of the building, from morning till night; and all the rooms were lighted up till nine o'clock in the evening. Every room and every ſtair-caſe was neatly ſwept and cleaned twice a-day; once early in the morning, before the people were aſſembled, and once while they were at dinner.—Care was taken, by placing ventilators, and occaſionally opening the windows, to keep the air of the rooms perfectly ſweet, and free from all diſagreeable ſmells; and the rooms themſelves were not only neatly white-waſhed and fitted up, and arranged in every reſpect with elegance, but care was taken to clean the windows very often;—to clean the court-

yard every day;—and even to clear away the rubbiſh from the ſtreet in front of the building, to a conſiderable diſtance on every ſide.

Thoſe who frequented this eſtabliſhment were expected to arrive at the fixed hour in the morning, which hour varied according to the ſeaſon of the year; if they came too late, they were gently reprimanded; and if they perſiſted in being tardy, without being able to give a ſufficient excuſe for not coming ſooner, they were puniſhed by being deprived of their dinner, which otherwiſe they received every day *gratis*.

At the hour of dinner, a large bell was rung in the court, when thoſe at work in the different parts of the building repaired to the dining-hall; where they found a wholeſome and nouriſhing repaſt; conſiſting of about *a pound and a quarter*, Avoirdupois weight, of a very rich ſoup of peas and barley, mixed with cuttings of fine white bread; and a piece of excellent rye bread, weighing *ſeven ounces*; which laſt they commonly put in their pockets, and carried home for their ſupper. Children were allowed the ſame portion as grown perſons; and a mother, who had one or more young children, was allowed a portion for each of them.

Thoſe who, from ſickneſs, or other bodily infirmities, were not able to come to the work-houſe;—as alſo thoſe who, on account of young children they had to nurſe, or ſick perſons to take care of, found it more convenient to work at their own lodgings, (and of theſe there were many,) were not on that

account deprived of their dinners. Upon repreſenting their caſes to the committee, tickets were granted them, upon which they were authorized to receive from the public kitchen, daily, the number of portions ſpecified in the ticket; and theſe they might ſend for by a child, or by any other perſon they thought proper to employ; it was neceſſary, however, that the ticket ſhould always be produced, otherwiſe the portions were not delivered. This precaution was neceſſary, to prevent abuſes on the part of the poor.

Many other precautions were taken to prevent frauds on the part of thoſe employed in the kitchen, and in the various other offices and departments concerned in feeding the poor.

The bread-corn, peaſe, barley, &c. were purchaſed in the public market in large quantities, and at times when thoſe articles were to be had at reaſonable prices; and were laid up in ſtore-rooms provided for that purpoſe, under the care of the ſtore-keeper of the Military Work-houſe.

The baker received his flour by weight from the ſtore-keeper, and in return delivered a certain fixed quantity of bread. Each loaf, when well baked, and afterwards dried, during four days, in a bread-room through which the air had a free paſſage, weighed two pounds ten ounces Avoirdupois. Such a loaf was divided into ſix portions; and large baſkets filled with theſe pieces being placed in the paſſage leading to the dining-hall, the portions were delivered out to the poor as they paſſed to go into the hall, each perſon who

paſſed

paſſed giving a medal of tin to the perſon who gave him the bread, in return for each portion received. Theſe medals, which were given out to the poor each day in the halls where they worked, by the ſteward, or by the inſpectors of the halls, ſerved to prevent frauds in the diſtribution of the bread; the perſon who diſtributed it being obliged to produce them as vouchers of the quantity given out each day.

Thoſe who had received theſe portions of bread, held them up in their hands upon their coming into the dining-hall, as a ſign that they had a right to ſeat themſelves at the tables; and as many portions of bread as they produced, ſo many portions of ſoup they were entitled to receive; and thoſe portions which they did not eat they were allowed to carry away; ſo that the delivery of bread was a check upon the delivery of ſoup, and *vice verſa*.

The kitchen was fitted up with all poſſible attention, as well to convenience, as to the economy of fuel. This will readily be believed by thoſe who are informed, that the whole work of the kitchen is performed, with great eaſe, by three cook-maids; and that the daily expence for fire-wood amounts to no more than twelve creutzers, or *four-pence-halfpenny* ſterling, when dinner is provided for 1000 people.

The number of perſons who are fed *daily* from this kitchen is, at a medium, in ſummer, about *one thouſand*, (rather more than leſs,) and in winter, about 1200. Frequently, however, there have been more than 1500 at table.

As

As a particular account of this kitchen, with drawings; together with an account of a number of new and very intereſting experiments relative to the economy of fuel, will be annexed to this work, I ſhall add nothing more now upon the ſubject; except it be the certificate, which may be ſeen in the Appendix, No. IV; which I have thought prudent to publiſh, in order to prevent my being ſuſpected of exaggeration in diſplaying the advantages of my economical arrangements.

The aſſertion, that a warm dinner may be cooked for 1000 perſons, at the trifling expence of four-pence halfpenny for fuel; and that, too, where the cord, five feet eight inches and nine-tenths long, five feet eight inches and nine-tenths high, and five feet three inches and two-tenths wide, Engliſh meaſure, of pine-wood, of the moſt indifferent quality, coſts above ſeven ſhillings; and where the cord of hard wood, ſuch as beech and oak, of equal dimenſions, coſts more than twice that ſum, may appear incredible; yet I will venture to aſſert, and I hereby pledge myſelf with the public to prove, that in the kitchen of the Military Academy at Munich, and eſpecially in a kitchen lately built under my direction at Verona, in the Hoſpital of *la Pietà*, I have carried the economy of fuel ſtill further.

To prevent frauds in the kitchen of the inſtitution for the poor at Munich, the ingredients are delivered each day by the ſtore-keeper, to the chief cook; and a perſon of confidence, not belonging to the kitchen, attends at the proper hour

to

to ſee that they are actually uſed. Some one of the inſpectors, or other chief officer of the eſtabliſhment, alſo attends at the hour of dinner, to ſee that the victuals furniſhed to the poor are good; well dreſſed; and properly ſerved up.

As the dining-hall is not large enough to accommodate all the poor at once, they dine in companies of as many as can be ſeated together (about 150); thoſe who work in the houſe being ſerved firſt, and then thoſe who come from the town.

Though moſt of thoſe who work in their own lodgings ſend for their dinners, yet there are many others, and particularly ſuch as from great age or other bodily infirmities are not able to work, who come from the town every day to the public hall to dine; and as theſe are frequently obliged to wait ſome time at the door, before they can be admitted into the dining hall;—that is to ſay, till all the poor who work in the houſe have finiſhed their dinners;—for their more comfortable accommodation, a large room, provided with a ſtove for heating it in winter, has been conſtructed, adjoining to the building of the inſtitution, but not within the court, where theſe poor people aſſembled, and are ſheltered from the inclemency of the weather while they wait for admittance into the dining-hall.

To preſerve order and decorum at theſe public dinners, and to prevent crowding and joſtling at the door of the dining-hall, the ſteward, or ſome other officer of the houſe of ſome authority, is always preſent in the hall during dinner; and two

privates

privates of the police guards, who know moſt of the poor perſonally, take poſt at the door of the hall, one on each ſide of it; and between them the poor are obliged to paſs ſingly into the hall.

As ſoon as a company have taken their places at the table, (the ſoup being always ſerved out and placed upon the tables before they are admitted,) upon a ſignal given by the officer who preſides at the dinner, they all repeat together a ſhort prayer. Perhaps I ought to aſk pardon for mentioning ſo old-faſhioned a cuſtom; but I own I am old-faſhioned enough myſelf to like ſuch things.

As an account in detail will be given in another place, of the expence of feeding theſe poor people, I ſhall only obſerve here, that this expence was conſiderably leſſened by the voluntary donations of bread, and offal meat, which were made by the bakers and butchers of the town and ſuburbs.

The beggars, not ſatisfied with the money which they extorted from all ranks of people by their unceaſing importunity, had contrived to lay certain claſſes of the inhabitants under regular periodical contributions of certain commodities; and eſpecially eatables; which they collected in kind. Of this nature were the contributions which were levied by them upon the bakers, butchers, keepers of eating houſes, ale-houſe-keepers, brewers, &c. all of whom were obliged, at ſtated periods;—once a-week at leaſt;—or oftener;—to deliver to ſuch of the beggars as preſented themſelves at the hour appointed, very conſiderable quantities of bread, meat,

meat, ſoup, and other eatables; and to ſuch a length were theſe ſhameful impoſitions carried, that a conſiderable traffic was actually carried on with the articles ſo collected, between the beggars and a number of petty ſhop-keepers, or huckſters, who purchaſed them of the beggars, and made a buſineſs of ſelling them by retail to the indigent and induſtrious inhabitants. And though theſe abuſes were well known to the public, yet this cuſtom had ſo long exiſted, and ſo formidable were the beggars become to the inhabitants, that it was by no means ſafe, or adviſeable, to refuſe their demands.

Upon the town being cleared of beggars, theſe impoſitions ceaſed of courſe; and the worthy citizens, who were relieved from this burthen, felt ſo ſenſibly the ſervice that was rendered them, that, to ſhow their gratitude, and their deſire to aſſiſt in ſupporting ſo uſeful an eſtabliſhment, they voluntarily offered, in addition to their monthly ſubſcriptions in money, to contribute every day a certain quantity of bread, meat, ſoup, &c. towards feeding the poor in the Military Work-houſe. And theſe articles were collected every day by the ſervants of the eſtabliſhment; who went round the town with ſmall carts, neatly fitted up, and elegantly painted, and drawn by ſingle ſmall horſes, neatly harneſſed.

As in theſe, as well as in all other collections of public charity, it was neceſſary to arrange matters ſo that the public might ſafely place the moſt perfect confidence in thoſe, who were charged with

theſe details; the collections were made in a manner in which it was *evidently impoſſible* for thoſe employed in making them to defraud the poor of any part of that which their charitable and more opulent fellow-citizens deſigned for their relief.—And to this circumſtance principally it may, I believe, be attributed, that theſe donations have for ſuch a length of time (more than five years) continued to be ſo conſiderable.

In the collection of the ſoup, and of the offal meat at the butchers' ſhops, as thoſe articles were not very valuable and not eaſily concealed or diſpoſed of, no particular precautions were neceſſary, other than ſending round *publicly* and at a *certain hour* the carts deſtined for thoſe purpoſes. Upon that for collecting the ſoup, which was upon four wheels, was a large caſk neatly painted, with an inſcription on each ſide in large letters, "*for the* "*Poor.*" That for the meat held a large tub with a cover, painted with the ſame colours, and marked on both ſides with the ſame inſcription.

Beſide this tub, other ſmaller tubs, painted in like manner, and bearing the ſame inſcription, "*for the Poor,*" were provided and hung up in conſpicuous ſituations in all the butchers' ſhops in the town. In doing this, two objects were had in view, firſt the convenience of the butchers, that in cutting up their meat they might have a convenient place to lay by that which they ſhould deſtine for the poor till it ſhould be called for; and ſecondly, to give an opportunity to thoſe who bought meat in their ſhops to throw in any odd ſcraps,

ſcraps, or bones, they might receive, and which they might not think worth the trouble of carrying home.

Theſe odd pieces are more frequently to be met with in the lots which are ſold in the butchers' ſhops in Munich than in almoſt any other town; for as the price of meat is fixed by authority, the butchers have a right to ſell the whole carcaſe, the bad pieces with the good, ſo that with each good lot there is what in this country is called the *zugewicht*,—that is to ſay,—an indifferent ſcrap of offal meat, or piece of bone to make up the weight;—and theſe refuſe pieces were very often thrown into the poor's tub; and after being properly cleaned and boiled, ſerved to make their ſoup much more ſavoury and nouriſhing.

In the collection of the daily donations of bread, as that article is more valuable, and more eaſily concealed and diſpoſed of, more precautions were uſed to prevent frauds on the parts of the ſervants who were ſent round to make the collection.

The cart which was employed for this purpoſe was furniſhed with a large wooden cheſt, firmly nailed down upon it, and provided with a good lock and key; and this cheſt, which was neatly painted, and embelliſhed with an inſcription, was ſo contrived, by means of an opening in the top of a large vertical wooden tube fixed in its lid, and made in the form of a mouſe-trap, that when it was locked, (as it always was when it was ſent round for the donations of bread,) a loaf of bread,

bread, or any thing of that ſize, could be put into it; but nothing could be taken out of it by the ſame opening. Upon the return of the cart, the bread-cheſt was opened by the ſteward, who keeps the key of it; and its contents, after being entered in a regiſter, kept for that purpoſe, were delivered over to the care of the ſtore-keeper.

The bread collected was commonly ſuch as, not having been ſold in time, had become too old, hard, and ſtale for the market, but which, being cut fine, a handful of it put into a baſon of good peaſe-ſoup, was a great addition to it.

The amount of theſe charitable donations in kind, may be ſeen in the tranſlations of the original returns, which are annexed in the Appendix, No. III.

The collections of ſoup were not long continued, it being found to be in general of much too inferior a quality to be mixed with the ſoup made in the kitchen of the poor-houſe; but the collections of bread, and of meat, continue to this time, and are ſtill very productive.

But the greateſt reſource in feeding the poor, is one which I am but juſt beginning to avail myſelf of,—the uſe of potatoes *. Of this ſubject, however, I ſhall treat more largely hereafter.

The above-mentioned precautions uſed in making collections in kind, may perhaps appear trifling, and ſuperfluous; they were nevertheleſs very neceſſary. It was alſo found neceſſary to change all the poor's-boxes in the churches, to prevent their

* This was written in the ſummer of the year 1795.

being robbed: for though in thoſe which were firſt put up, the openings were not only ſmall, but ended in a curved tube, ſo that it appeared almoſt impoſſible to get any of the money out of the box by the ſame opening by which it was put into it; yet means were found, by introducing into the opening thin pieces of elaſtic wood, covered with bird-lime, to rob the boxes. This was prevented in the new boxes, by cauſing the money to deſcend through a ſort of bag, with a hole in the bottom of it, or rather a flexible tube, made of chain-work, with iron wire, ſuſpended in the middle of the box.

CHAP. VI.

Apology for the Want of Method in treating the Subject under Conſideration.—Of the various Means uſed for encouraging Induſtry among the Poor.—Of the internal Arrangement and Government of the Houſe of Induſtry.—Why called the Military Work-houſe. Of the Manner in which the Buſineſs is carried on there.—Of the various Means uſed for preventing Frauds in carrying on the Buſineſs in the different Manufactures.—Of the flouriſhing State of thoſe Manufactures.

THOUGH all the different parts of a well-arranged eſtabliſhment go on together, and harmonize, like the parts of a piece of muſic in full ſcore, yet in deſcribing ſuch an eſtabliſhment, it is impoſſible to write like the muſician, *in ſcore*, and to make all the parts of the narrative advance together. Various movements, which exiſt together, and which have the moſt intimate connection and dependence upon each other, muſt nevertheleſs be deſcribed ſeparately; and the greateſt care and attention, and frequently no ſmall ſhare of addreſs, are neceſſary in the management of ſuch deſcriptions, to render the details intelligible; and to give the whole its full effect of order;—dependence;—connection;—and harmony. And in no caſe can theſe difficulties be greater, than in deſcriptions like

thoſe in which I am now engaged; where the number of the objects, and of the details, is ſo great, that it is difficult to determine which ſhould be attended to firſt; and how far it may ſafely be purſued, without danger of the others being too far removed from their proper places;—or excluded;—or forgotten.

The various meaſures adopted, and precautions taken, in arreſting the beggars,—in collecting and diſtributing alms,—in eſtabliſhing order and police among them,—in feeding and clothing the poor,—and in eſtabliſhing various manufactures for giving them employment, are all ſubjects which deſerve, and require, the moſt particular explanation; yet thoſe are not only operations which were begun at the ſame time, and carried on together; but they are ſo dependent upon each other, that it is almoſt impoſſible to have a complete idea of the one, without being acquainted with the others; or of treating of the one, without mentioning the others at the ſame time.—This, therefore, muſt be my excuſe, if I am taxed with want of method, or of perſpicuity in the deſcriptions; and this being premiſed, I ſhall proceed to give an account of the various objects and operations which yet remain to be deſcribed.

I have already obſerved how neceſſary it was to encourage, by every poſſible means, a ſpirit of induſtry and emulation among thoſe, who, from leading a life of indolence and debauchery, were to be made uſeful members of ſociety; and I have mentioned ſome of the meaſures which were adopted for that purpoſe. It remains for me to purſue this intereſting

intereſting ſubject, and to treat it, in all its details, with that care and attention which its importance ſo juſtly demands.

Though a very generous price was paid for labour, in the different manufactures in which the poor were employed, yet, that alone was not enough to intereſt them ſufficiently in the occupations in which they were engaged. To excite their activity, and inſpire them with a true ſpirit of perſevering induſtry, it was neceſſary to fire them with emulation;—to awaken in them a dormant paſſion, whoſe influence they had never felt;—the love of honeſt fame;—an ardent deſire to excel;—the love of glory;—or by what other more humble or pompous name *this paſſion*, the moſt noble and moſt beneficent that warms the human heart, can be diſtinguiſhed.

To excite emulation;—praiſe;—diſtinctions;—rewards are neceſſary; and theſe were all employed. Thoſe who diſtinguiſhed themſelves by their application,—by their induſtry,—by their addreſs,—were publicly praiſed and encouraged;—brought forward, and placed in the moſt conſpicuous ſituations;—pointed out to ſtrangers who viſited the eſtabliſhment; and particularly named and propoſed as models for others to copy.

A particular dreſs, a ſort of uniform for the eſtabliſhment, which, though very economical, as may be ſeen by the details which will be given of it in another place, was nevertheleſs elegant, was provided; and this dreſs, as it was given out *gratis*, and only beſtowed upon thoſe who particularly diſtinguiſhed themſelves, was ſoon looked upon as

an honourable mark of approved merit; and ſerved very powerfully to excite emulation among the competitors.

I doubt whether vanity, in any inſtance, ever ſurveyed itſelf with more ſelf-gratification, than did ſome of theſe poor people when they firſt put on their new dreſs.

How neceſſary is it to be acquainted with the ſecret ſprings of action in the human heart, to direct even the loweſt and moſt unfeeling claſs of mankind!—The machine is intrinſically the ſame in all ſituations;—the great ſecret is, *firſt to put it in tune*, before an attempt is made to play upon it.

The jarring ſounds of former vibrations muſt firſt be ſtilled, otherwiſe no harmony can be produced; but when the inſtrument is in order, the notes *cannot fail* to anſwer to the touch of a ſkilful maſter.

Though every thing was done that could be deviſed to impreſs the minds of all thoſe, old and young, who frequented this eſtabliſhment, with ſuch ſentiments as were neceſſary in order to their becoming good and uſeful members of ſociety; (and in theſe attempts I was certainly ſucceſsful, much beyond my moſt ſanguine expectations;) yet my hopes were chiefly placed on the riſing generation.

The children, therefore, of the poor, were objects of my peculiar care and attention. To induce their parents to ſend them to the eſtabliſhment, even before they were old enough to do any kind of work, when they attended at the regular hours, they not only received their dinner *gratis*, but each of them was paid *three creutzers* a day *for doing nothing*, but merely *being preſent where others worked.*

I have

I have already mentioned that theſe children, who were too young to work, were placed upon ſeats built round the halls where other children worked. This was done in order to inſpire them with a deſire to do that, which other children, apparently more favoured,—more careſſed,—and more praiſed than themſelves, were permitted to do; and of which they were obliged to be idle ſpectators; and this had the deſired effect.

As nothing is ſo tedious to a child as being obliged to ſit ſtill in the ſame place for a conſiderable time, and as the work which the other more favoured children were engaged in, was light and eaſy, and appeared rather amuſing than otherwiſe, —being the ſpinning of hemp and flax, with ſmall light wheels, turned with the foot,—theſe children, who were obliged to be ſpectators of this buſy and entertaining ſcene, became ſo uneaſy in their ſituations, and ſo *jealous* of thoſe who were permitted to be more active, that they frequently ſolicited with the greateſt importunity to be permitted to work, and often cried moſt heartily if this favour was not inſtantly granted them.

How ſweet theſe tears were to me, can eaſily be imagined!

The joy they ſhowed upon being permitted to deſcend from their benches, and mix with the working children below, was equal to the ſolicitude with which they had demanded that favour.

They were at firſt merely furniſhed with a wheel, which they turned for ſeveral days, with the foot, without being permitted to attempt any thing fur-

ther. As ſoon as they were become dexterous in this ſimple operation, and habit had made it ſo eaſy and familiar to them that the foot could continue its motion mechanically, without the aſſiſtance of the head; – till they could go on with their work, even though their attention was employed upon ſomething elſe; – till they could anſwer queſtions, and converſe freely with thoſe about them upon indifferent ſubjects, without interrupting or embarraſſing the regular motion of the wheel,—then,—and not till then,—they were furniſhed with hemp or flax, and were taught to ſpin.

When they had arrived at a certain degree of dexterity in ſpinning hemp and flax, they were put to the ſpinning of wool; and this was always repreſented to them, and conſidered by them, as an honourable promotion. Upon *this* occaſion they commonly received ſome public reward, a new ſhirt,—a pair of ſhoes,—or perhaps the uniform of the eſtabliſhment, as an encouragement to them to perſevere in their induſtrious habits.

As conſtant application to any occupation for too great a length of time is apt to produce diſguſt, and in children might even be detrimental to health, beſide the hour of dinner, an hour of relaxation from work, (from eight o'clock till nine,) in the forenoon, and another hour, (from three o'clock till four,) in the afternoon, were allowed them; and theſe two hours were ſpent in a ſchool; which, for want of room elſewhere in the houſe, was kept in the dining-hall, where they were taught reading, writing, and arithmetic, by a ſchool-

ſchool-maſter engaged and paid for that purpoſe*. Into this ſchool other Perſons who worked in the houſe, of a more advanced age, were admitted, if they requeſted it; but few grown perſons ſeemed deſirous of availing themſelves of this permiſſion. As to the children, they had no choice in the matter; thoſe who belonged to the eſtabliſhment were obliged to attend the ſchool regularly every day, morning and evening. The ſchool books, paper, pens, and ink, were furniſhed at the expence of the eſtabliſhment.

To diſtinguiſh thoſe among the grown perſons that worked in the houſe, who ſhewed the greateſt dexterity and induſtry in the different manufactures in which they were employed, the beſt workmen were ſeparated from the others, and formed diſtinct claſſes, and were even aſſigned ſeparate rooms and apartments.

This ſeparation was productive of many advantages; for, beſide the ſpirit of emulation which it excited, and kept alive, in every part of the eſtabliſhment, it afforded an opportunity of carrying on the different manufactures in a very advantageous

* As theſe children were not ſhut up and confined like priſoners in the houſe of induſtry, but all lodged in the town, with their parents or friends, they had many opportunities to recreate themſelves, and take exerciſe in the open air; not only on holidays, of which there are a very large number indeed kept in Bavaria; but alſo on working-days, in coming and going to and from the houſe of induſtry. Had not this been the caſe, a reaſonable time would certainly have been allowed them for play and recreation. The cadets belonging to the Military Academy at Munich are allowed no leſs than *three hours* a day for exerciſe and relaxation, viz. *one hour* immediately after dinner, which is devoted to muſic, and *two hours*, later in the afternoon, for walking in the country, or playing in the open fields near the town.

manner.

manner. The moſt dextrous among the wool-ſpinners, for inſtance, were naturally employed upon the fineſt wool, ſuch as was uſed in the fabrication of the fineſt and moſt valuable goods; and it was very neceſſary that theſe ſpinners ſhould be ſeparated from the others, who worked upon coarſer materials; otherwiſe, in the manipulations of the wool, as particles of it are unavoidably diſperſed about in all directions when it is ſpun, the coarſer particles thus mixing with the fine would greatly injure the manufacture. It was likewiſe neceſſary, for a ſimilar reaſon, to ſeparate the ſpinners who were employed in ſpinning wool of different colours. But as theſe, and many other like precautions are well known to all manufacturers, it is not neceſſary that I ſhould inſiſt upon them any farther in this place; nor indeed is it neceſſary that I ſhould enter into all the details of any of the manufactures carried on in the eſtabliſhment I am deſcribing. It will be quite ſufficient, if I merely enumerate them, and give a brief account of the meaſures adopted to prevent frauds on the part of the workmen, and others, who were employed in carrying them on.

In treating this ſubject it will however be neceſſary to go back a little, and to give a more particular account of the internal government of this eſtabliſhment; and firſt of all I muſt obſerve, that the government of the *Military Work-houſe*, as it is called, is quite diſtinct from the government of the inſtitution for the poor; the Work-houſe being merely a manufactory, like any other manufactory, ſupported upon its own private capital; which

which capital has no connection whatever with any fund deſtined for the poor.—It is under the ſole direction of its own particular governors and overſeers, and is carried on at the ſole riſk of the owner. *The inſtitution for the poor*, on the other hand is merely an inſtitution of charity, joined to a general direction of the police, as far as it relates to paupers. The committee, *or deputation*, as it is called, which is at the head of this inſtitution, has the ſole direction of all funds deſtined for the relief of the poor in Munich, and the diſtribution of alms. This deputation has likewiſe the direction of the kitchen, and bakehouſe, which are eſtabliſhed in the Military Work-houſe; and of the details relative to the feeding of the poor; for it is from the funds deſtined for the relief of the poor that theſe expences are defrayed: the deputation is alſo in connexion with the Military Work-houſe relative to the clothing of the poor, and the diſtribution of rewards to thoſe of them who particularly diſtinguiſhed themſelves by their good behaviour and their induſtry, but this is merely a mercantile correſpondence. The deputation has no right to interfere in any way whatever in the internal management of this eſtabliſhment, conſidered as a manufactory. In this reſpect it is to all intents and purpoſes a perfectly diſtinct and independent eſtabliſhment.—But notwithſtanding this, the two eſtabliſhments are ſo dependent on each other in many reſpects, that neither of them could well ſubſiſt alone.

The Military Work-houſe being principally deſigned as a manufactory for clothing the army, its

its capital, which at firſt conſiſted in about 150,000 florins, but which has ſince increaſed to above 250,000 florins, was advanced by the military cheſt.—and hence it is, that it was called *the Military Work-houſe*, and put under the direction of the council of war.

For the internal management of the eſtabliſhment, a ſpecial commiſſion was named, conſiſting of one counſellor of war, of the department of military economy, or of the clothing of the army;—one captain, which laſt is inſpector of the houſe, and has apartments in it, where he lodges;—and the ſtore-keeper of the magazine of military clothing.

Theſe *commiſſioners*, who have the magazine of military clothing at the ſame time under their direction, have, under my immediate ſuperintendence, the ſole government and direction of this eſtabliſhment;—of all the inferior officers;—ſervants;—manufacturers;—and workmen, belonging to it; and of all mercantile operations;—contracts;—purchaſes;—ſales, &c. And it is with theſe commiſſioners that the regiments correſpond, in order to be furniſhed with clothing and other neceſſaries; and into their hands they pay the amount of the different articles received.

The caſh belonging to this eſtabliſhment is placed in a cheſt furniſhed with three ſeparate locks, of one of which each of the commiſſioners keeps the key; and all theſe commiſſioners are jointly, and ſeverally, anſwerable for the contents of the cheſt.

Theſe

Theſe commiſſioners hold their ſeſſions regularly twice a week, or oftener if circumſtances require it, in a room in the Military Work-houſe deſtined for that purpoſe, where the correſpondence, and all accounts and documents belonging to the eſtabliſhment, and other records, are kept; and where the ſecretary of the commiſſion conſtantly attends.

When very large contracts are made for the purchaſe of raw materials, particularly when they are made with foreigners, the conditions are firſt ſubmitted by the commiſſioners to the council of war for their approbation; but in all concerns of leſs moment, and particularly in all the current buſineſs of the eſtabliſhment;—in the ordinary purchaſes,—ſales,—and other mercantile tranſactions; the commiſſioners act by their own immediate authority: but all the tranſactions of the commiſſioners *being entered regularly in their journals*, and the moſt particular account of all ſales, and purchaſes, and other receipts and expenditures being kept; and inventories being taken every year, of all raw materials;—manufactures upon hand; and other effects, belonging to the eſtabliſhment; and an annual account of profit and loſs, regularly made out; all peculation, and other abuſes, are moſt effectually prevented.

The ſteward, or *ſtore-keeper of raw materials*, as he is called, has the care of all raw materials, and of all finiſhed manufactures deſtined for private ſale. The former are kept in magazines, or ſtore-rooms, of which he alone has the keys,—the latter are

kept in rooms ſet apart as a ſtore,—or ſhop,—where they are expoſed for public inſpection, and ſale.

To prevent abuſes in the ſale of theſe manufactures, their prices, which are determined upon a calculation of what they coſt, and a certain *per cent.* added for the profits of the houſe, are marked upon the goods, and are never altered; and a regular account is kept of all, even of the moſt inconſiderable articles ſold, in which not only the commodity, with its quality, quantity, and price, is ſpecified; but the name of the purchaſer, and the day of the month when the purchaſe was made, are mentioned.

All articles of clothing deſtined for the army which are made up in the houſe; as well as all goods in the piece, deſtined for military clothing, are lodged in the Military Magazine; which is ſituated at ſome diſtance from the Military Workhouſe; and is under the care and inſpection of the Military ſtore-keeper.

From this *Military Magazine*, which may be conſidered as an appendix to the Military Workhouſe, and is in fact under the ſame direction, the regiments are ſupplied with every article of their clothing. But in order that the army accounts may be more ſimple, and more eaſily checked, and that the total annual expence of each regiment may be more readily aſcertained, the regiments pay, at certain fixed prices, for all the articles they receive from the Military Magazine, and charge ſuch expenditures in the annual account which they ſend in to the War Office.

The order obſerved with regard to the delivery of the raw materials by the ſtore-keeper or ſteward of the Military Work-houſe to thoſe employed in manufacturing them, is as follows:

In the manufactures of wool, for inſtance, he delivers to the maſter-clothier a certain quantity, commonly 100 pounds, of wool, of a certain quality and deſcription; taken from a certain diviſion, or bin, in the Magazine; bearing a certain number; in order to its being ſorted. And as a regiſter is kept of the wool that is put into theſe bins from time to time, and as the lots of wool are always kept ſeparate, it is perfectly eaſy at any time to determine when,—and where,—and from whom, the wool delivered to the ſorter was purchaſed; and what was paid for it; and conſequently, to trace the wool from the flock where it was grown, to the cloth into which it was formed; and even to the perſon who wore it. And ſimilar arrangements are adopted with regard to all other raw materials uſed in the various manufactures.

The advantages ariſing from this arrangement are too obvious to require being particularly mentioned. It not only prevents numberleſs abuſes on the part of thoſe employed in the various manufactures, but affords a ready method of detecting any frauds on the part of thoſe from whom the raw materials are purchaſed.

The wool received by the maſter-clothier is by him delivered to the wool-ſorters to be ſorted. To prevent frauds on the part of the wool-ſorters, not

not only all the wool-ſorters work in the ſame room, under the immediate inſpection of the maſter wool-ſorter, but a certain quantity of each lot of wool being ſorted in the preſence of ſome one of the public officers belonging to the houſe, it is ſeen by the experiment how much *per cent.* is loſt by the ſeparation of dirt and filth in ſorting; and the quantity of ſorted wool of the different qualities, which the ſorter is obliged to deliver for each *hundred pounds* weight of wool received from the magazine, is from hence determined.

The great ſecret of the woollen manufactory is in the ſorting of the wool, and if this is not particularly attended to; that is to ſay, if the different kinds of wool of various qualities which each fleece naturally contains, are not carefully ſeparated; and if each kind of wool is not employed for that purpoſe, and *for that alone*, for which it is beſt calculated, no woollen manufactory can poſſibly ſubſiſt with advantage.

Each fleece is commonly ſeparated into five or ſix different parcels of wool, of different qualities, by the ſorters in the Military Work-houſe; and of theſe parcels ſome are employed for warp;—others for woof;—others for combing;—and that which is very coarſe and indifferent, for coarſe mittens for the peaſants; for the liſts of broad cloths, &c.

The wool, when ſorted, is delivered back by the maſter-clothier to the ſteward, who now places it in the *ſorted-wool magazine*, where it is kept in ſeparate bins, according to its different qualities and

and deſtinations, till it is delivered out to be manufactured. As theſe bins are all numbered, and as the quality and deſtination of the wool which is lodged in each bin is always the ſame, it is ſufficient in deſcribing the wool afterwards as it paſſes through the hands of the different manufacturers, merely to mention *its number;* that is to ſay, the number of the bin in the *ſorted-wool-magazine* from whence it was taken.

As a more particular account of theſe various manipulations, and the means uſed to prevent frauds, may not only be intereſting to all who are curious in theſe matters, but may alſo be of real uſe to ſuch as may engage in ſimilar undertakings, I ſhall take the liberty to enlarge a little upon this ſubject.

From the magazine of ſorted wool, the maſter-clothier receives this ſorted wool again, in order to its being wolfed,—greaſed,—carded,—and ſpun, under his inſpection, and then delivered into the ſtore-room of woollen yarn. As woollen yarn he receives it again, and delivers it to the cloth-weaver.—The cloth-weaver returns it in cloth to the ſteward.—The ſteward delivers it to the fuller;—the fuller to the cloth-ſhearer;—the cloth-ſhearer to the cloth-preſſer;—and the cloth-preſſer to the ſteward;—and by this laſt it is delivered into the Military Magazine, if deſtined for the army; if not, it is placed in the ſhop for ſale.

The maſter-clothier is anſwerable for all the ſorted wool he receives, till he delivers it to the clerk of the wool-ſpinners; and all his accounts are ſettled with the ſteward once a week.—The clerk of the

ſpinners is anſwerable for the carded and combed wool he receives from the maſter-clothier, till it is delivered in yarn in the ſtore-room; and his accounts are likewiſe ſettled with the maſter-clothier, and with the clerk of the ſtore-room, (who is called the clerk of the controul,) once a week.

The ſpinners' wages are paid by the clerk of the controul, upon the ſpin-ticket, ſigned by the clerk of the ſpinners; in which ticket, the quantity and quality of the yarn ſpun being ſpecified, together with the name of the ſpinner, the weekly delivery of yarn by the clerk of the ſpinners into the ſtore-room, muſt anſwer to the ſpin-tickets received and paid by the clerk of the controul.

More effectually to prevent frauds, each delivery of yarn to the clerk of the ſpinners is bound up in a ſeparate bundle, to which is attached an abſtract of the ſpin-ticket, in which abſtract is ſpecified, the name of the ſpinner;—the date of the delivery;—the number of the ſpin-ticket;—and the quantity and quality of the yarn. This arrangement not only facilitates the ſettlement of the weekly accounts between the clerk of the ſpinners and the clerk of the controul, when the former makes his weekly delivery of yarn into the ſtore-room, but renders it eaſy alſo to detect any frauds committed by the ſpinners.

The wages of the ſpinners are regulated by the fineneſs of the yarn; that is, by the number of ſkains, or rather knots, which they ſpin from the pound of wool. Each knot is compoſed of 100 threads, and each thread, or turn of the reel, is two Bavarian yards in length; and to prevent frauds in reeling, clock-reels, proved and ſealed, are

are furniſhed by the eſtabliſhment to all the ſpinners. It is poſſible, however, notwithſtanding this precaution, for the ſpinners to commit frauds, by binding up knots containing a ſmaller number of threads than 100.—It is true they have little temptation to do ſo, for as their wages are in fact paid by the *weight* of the yarn delivered, and the number of knots ſerving merely to determine the price *by the pound* which they have a right to receive, any advantages they can derive from frauds committed in reeling are very trifling indeed. But trifling as they are, ſuch frauds would no doubt ſometimes be committed, were it not known that it is abſolutely *impoſſible* for them to eſcape detection.

Not only the clerk of the ſpinners examines the yarn when he receives it, and counts the threads in any of the knots which appear to be too ſmall, but the name of the ſpinner, with a note of the quantity of knots, accompanies the yarn into the ſtore-room, as was before obſerved, and from thence to the ſpooler, by whom it is wound off; any frauds committed in reeling cannot fail to be brought home to the ſpinner.

The bundles of carded wool delivered to the ſpinners, though they are called *pounds*, are not exact pounds. They contain each as much more than a pound, as is neceſſary, allowing for waſtage in ſpinning, in order that the yarn when ſpun may weigh a pound. If the yarn is found to be wanting in weight, a proportional deduction is made from the wages of the ſpinner; which deduction, to prevent frauds, amounts to a trifle more than the value of the yarn which is wanting.

Frauds in weaving are prevented by delivering the yarn to the weavers by weight, and receiving the cloth by weight from the loom. In the other operations of the manufactures, ſuch as fulling, ſhearing, preſſing, &c. no frauds are to be apprehended.

Similar precautions are taken to prevent frauds in the linen;—cotton;—and other manufactures carried on in the houſe; and ſo effectual are the means adopted, that during more than five years that have elapſed ſince the eſtabliſhment was inſtituted, no one fraud of the leaſt conſequence has been diſcovered; the evident impoſſibility of eſcaping detection in thoſe practices, having prevented the attempt.

Though the above-mentioned details may be ſufficient to give ſome idea of the general order which reigns in every part of this extenſive eſtabliſhment; yet, as ſucceſs in an undertaking of this kind depends eſſentially on carrying on the buſineſs in all its various branches in the moſt methodical manner, and rendering one operation a check upon the other, as well as in making the perſons employed abſolutely reſponſible for all frauds and neglects committed in their various departments. I ſhall either add in the Appendix, or publiſh ſeparately, a full account of the internal details of the various trades and manufactures carried on in the Military Workhouſe, and copies of all the different tickets,—returns,—tables,—accounts, &c. made uſe of in carrying on the buſineſs of this eſtabliſhment.

Though theſe accounts will render this work more voluminous than I could have wiſhed, yet, as ſuch details can hardly fail to be very uſeful to

thoſe who, either upon a larger or ſmaller ſcale, may engage in ſimilar undertakings, I have determined to publiſh them.

To ſhow that the regulations obſerved in carrying on the various trades and manufactures in the Military Work-houſe are good, it will, I flatter myſelf, be quite ſufficient to refer to the flouriſhing ſtate of the eſtabliſhment;—to its growing reputation;—to its extenſive connections, which reach even to foreign countries;—to the punctuality with which all its engagements are fulfilled;—to its unimpeached credit;—and to its growing wealth.

Notwithſtanding all the diſadvantages under which it laboured in its infant ſtate, the net profits ariſing from it during the ſix years it has exiſted amount to above 100,000 florins; after the expences of every kind,—ſalaries,—wages,—repairs, &c. have been deducted; and the buſineſs is ſo much increaſed of late, in conſequence of the augmentation of the demands of clothing for the troops, that the amount of the orders received and executed the laſt year did not fall much ſhort of *half a million* of florins.

It may be proper to obſerve, that, not the whole army of the Elector, but only the fifteen Bavarian regiments, are furniſhed with clothing from the Military Work-houſe at Munich. The troops of the Palatinate, and thoſe of the Duchies of Juliers and Bergen, receive their clothing from a ſimilar eſtabliſhment at Manheim.

The Military Work-houſe at Manheim was indeed erected ſeveral months before that at Munich;

but as it is not immediately connected with any inſtitution for the poor,—as the poor are not fed in it,—and as it was my firſt attempt, or *coup d'eſſai*, it is, in many reſpects, inferior in its internal arrangements to that at Munich. I have therefore choſen this laſt for the ſubject of my deſcriptions; and would propoſe it as a model for imitation, in preference to the other.

As both theſe eſtabliſhments owe their exiſtence to myſelf, and as they both remain under my immediate ſuperintendance, it may very naturally be aſked, why that at Manheim has not been put upon the ſame footing with that at Munich?—My anſwer to this queſtion would be, that a variety of circumſtances, too foreign to my preſent ſubject to be explained here, prevented the eſtabliſhment of the Military Work-houſe at Manheim being carried to that perfection which I could have wiſhed *.

But it is time that I ſhould return to the poor at Munich; for whoſe comfort and happineſs I laboured with ſo much pleaſure, and whoſe hiſtory will ever remain by far the moſt intereſting part of this publication.

* Since the publication of the firſt edition of this Eſſay, the Author has received an account of the total deſtruction of the Military Work-houſe at Manheim. It was deſtroyed during the late ſiege of that city by the Auſtrian troops.

CHAP. VII.

A farther Account of the Poor who were brought together in the Houſe of Induſtry:—And of the intereſting change which was produced in their Manners and Diſpoſitions.—Various Proofs that the Means uſed for making them induſtrious, comfortable, and happy, were ſucceſsful.

THE awkwardneſs of theſe poor creatures, when they were firſt taken from the ſtreets as beggars, and put to work, may eaſily be conceived; but the facility with which they acquired addreſs in the various manufactures in which they were employed, was very remarkable, and much exceeded my expectation. But what was quite ſurpriſing, and at the ſame time intereſting in the higheſt degree, was the apparent and rapid change which was produced in their manners,—in their general behaviour,—and even in the very air of their countenances, upon being a little accuſtomed to their new ſituations.

The kind uſage they met with, and the comforts they enjoyed, ſeemed to have ſoftened their hearts, and awakened in them ſentiments as new and ſurpriſing to themſelves, as they were intereſting to thoſe about them.

The melancholy gloom of miſery, and air of uneaſineſs and embarraſſment, diſappeared by little and little from their countenances, and were ſuc-

ceeded by a timid dawn of cheerfulneſs, rendered moſt exquiſitely intereſting by a certain mixture of ſilent gratitude, which no language can deſcribe.

In the infancy of this eſtabliſhment, when theſe poor creatures were firſt brought together, I uſed very frequently to viſit them,—to ſpeak kindly to them,—and to encourage them;—and I ſeldom paſſed through the halls where they were at work, without being a witneſs to the moſt moving ſcenes.

Objects, formerly the moſt miſerable and wretched, whom I had ſeen for years as beggars in the ſtreets;—young women,—perhaps the unhappy victims of ſeduction, who, having loſt their reputation, and being turned adrift in the world, without a friend and without a home, were reduced to the neceſſity of begging, to ſuſtain a miſerable exiſtence, now recognized me as their benefactor, and, with tears dropping faſt from their cheeks, continued their work in the moſt expreſſive ſilence.

If they were aſked, what the matter was with them? their anſwer was, ("nichts") "nothing;" accompanied by a look of affectionate regard and gratitude, ſo exquiſitely touching as frequently to draw tears from the moſt inſenſible of the byſtanders.

It was not poſſible to be miſtaken with reſpect to the real ſtate of the minds of theſe poor people; every thing about them ſhowed that they were deeply affected with the kindneſs ſhown them;—and that their hearts were really ſoftened, appeared, not only from their unaffected expreſſions of gratitude, but alſo from the effuſions of their affectionate

tionate regard for thoſe who were dear to them. In ſhort, never did I witneſs ſuch affecting ſcenes as paſſed between ſome of theſe poor people and their children.

It was mentioned above that the children were ſeparated from the grown perſons. This was the caſe at firſt; but as ſoon as order was thoroughly eſtabliſhed in every part of the houſe, and the poor people had acquired a certain degree of addreſs in their work, and evidently took pleaſure in it, as many of thoſe who had children expreſſed an earneſt deſire to have them near them, permiſſion was granted for that purpoſe; and the ſpinning halls, by degrees, were filled with the moſt intereſting little groups of induſtrious families, who vied with each other in diligence and addreſs; and who diſplayed a ſcene, at once the moſt buſy, and the moſt cheerful, that can be imagined.

An induſtrious family is ever a pleaſing object; but there was ſomething peculiarly intereſting and affecting in the groups of theſe poor people. Whether it was, that thoſe who ſaw them compared their preſent ſituation with the ſtate of miſery and wretchedneſs from which they had been taken; —or whether it was the joy and exultation which were expreſſed in the countenances of the poor parents in contemplating their children all buſily employed about them;—or the air of ſelf-ſatisfaction which theſe little urchins put on, at the conſciouſneſs of their own dexterity, while they purſued their work with redoubled diligence upon being obſerved, that rendered the ſcene ſo ſingularly intereſting,—

I know not; but certain it is, that few ſtrangers who viſited the eſtabliſhment came out of theſe halls without being much affected.

Many humane and well-diſpoſed perſons are often withheld from giving alms, on account of the bad character of beggars in general; but this circumſtance, though it ought undoubtedly to be taken into conſideration in determining the mode of adminiſtering our charitable aſſiſtance, ſhould certainly not prevent our intereſting ourſelves in the fate of theſe unhappy beings. On the contrary, it ought to be an additional incitement to us to relieve them;—for nothing is more certain, than that their crimes are very often the *effects*, not the *cauſes* of their miſery; and when this is the caſe, by removing the cauſe, the effects will ceaſe.

Nothing is more extraordinary and unaccountable than the inconſiſtency of mankind in every thing, even in the practice of that divine virtue benevolence; and moſt of our miſtakes ariſe more from indolence and from inattention, than from any thing elſe. The buſy part of mankind are too intent upon their own private purſuits; and thoſe who have leiſure are too averſe from giving themſelves trouble, to inveſtigate a ſubject but too generally conſidered as tireſome and unintereſting. But if it be true, that we are really happy only in proportion as we ought to be ſo;—that is, in proportion as we are inſtrumental in promoting the happineſs of others; no ſtudy ſurely can be ſo intereſting, as that which teaches us how moſt effectually

tually to contribute to the well-being of our fellow-creatures.

If *love* be blind, *ſelf-love* is certainly very ſhort-ſighted; and, without the aſſiſtance of reaſon and reflection, is but a bad guide in the purſuit of happineſs.

Thoſe who take pleaſure in depreciating all the ſocial virtues have repreſented pity as a mere ſelfiſh paſſion; and there are ſome circumſtances which appear to juſtify this opinion. It is certain that the misfortunes of others affect us, not in proportion to their greatneſs, but in proportion to their nearneſs to ourſelves; or to the chances that they may reach us in our turns. A rich man is infinitely more affected at the misfortune of his neighbour, who, by the failure of a banker with whom he had truſted the greater part of his fortune,—by an unlucky run at play,—or by other loſſes, is reduced from a ſtate of affluence, to the neceſſity of laying down his carriage;—leaving the town;—and retiring into the country upon a few hundreds a year;—than by the total ruin of the induſtrious tradeſmen over the way, who is dragged to priſon, and his numerous family of young and helpleſs children left to ſtarve.

But however ſelfiſh pity may be, *benevolence* certainly ſprings from a more noble origin. It is a good-natured, generous ſentiment, which does not require being put to the torture in order to be ſtimulated to action. And it is this ſentiment, not pity or compaſſion, which I would wiſh to excite.

Pity is always attended with pain; and if our ſufferings at being witneſſes of the diſtreſſes of others, ſometimes force us to relieve them, we can neither have much merit, nor any laſting ſatisfaction, from ſuch involuntary acts of charity; but the enjoyments which reſult from acts of genuine benevolence are as laſting as they are exquiſitely delightful; and the more they are analyzed and contemplated, the more they contribute to that inward peace of mind and ſelf-approbation, which alone conſtitute real happineſs.—This is the "*ſoul's calm ſunſhine, and the heart-felt joy*," which are virtue's prize.

To induce mankind to engage in any enterpriſe, it is neceſſary, firſt, to ſhow that ſucceſs will be attended with real advantage; and, ſecondly, that it may be obtained without much difficulty.

The rewards attendant upon acts of benevolence have ſo often been deſcribed and celebrated, in every country and in every language, that it would be preſumption in me to ſuppoſe I could add any thing new upon a ſubject already diſcuſſed by the greateſt maſters of rhetoric, and embelliſhed with all the irreſiſtible charms of eloquence; but as *examples of ſucceſs* are ſometimes more efficacious in ſtimulating mankind to action, than the moſt ſplendid reaſonings and admonitions, it is upon my *ſucceſs* in the enterpriſe of which I have undertaken to give an account, that my hopes of engaging others to follow ſuch an example are chiefly founded; and hence it is, that I ſo often return to that part of my ſubject, and inſiſt with ſo much perſe-

perſeverance upon the pleaſure which this ſucceſs afforded me. I am aware that I expoſe myſelf to being ſuſpected of oſtentation, particularly by thoſe who are not able to enter fully into my ſituation and feelings; but neither this, nor any other conſideration, ſhall prevent me from treating the ſubject in ſuch a manner as may appear beſt adapted to render my labours of public utility.

Why ſhould I not mention even the marks of affectionate regard and reſpect which I received from the poor people for whoſe happineſs I intereſted myſelf;—and the teſtimonies of the public eſteem with which I was honoured?—Will it be reckoned vanity, if I mention the concern which the Poor of Munich expreſſed in ſo affecting a manner when I was dangerouſly ill?—that they went publicly in a body in proceſſion to the cathedral church, where they had divine ſervice performed, and put up public prayers for my recovery?—that four years afterwards, on hearing that I was again dangerouſly ill at Naples, they, of their own accord, ſet apart an hour each evening, after they had finiſhed their work in the Military Work-houſe, to pray for me?

Will it be thought improper to mention the affecting reception I met with from them, at my firſt viſit to the Military Work-houſe upon my return to Munich laſt ſummer, after an abſence of fifteen months; a ſcene which drew tears from all who were preſent?—and muſt I refuſe myſelf the ſatisfaction of deſcribing the fête I gave them in return, in the Engliſh Garden at which

1800 poor people of all ages, and above 30,000 of the inhabitants of Munich, aſſiſted? and all this pleaſure I muſt forego, merely that I may not be thought vain and oſtentatious?—Be it ſo then;—but I would juſt beg leave to call the reader's attention to my feelings upon the occaſion; and then let him aſk himſelf, if any earthly reward can poſſibly be ſuppoſed greater;—any enjoyments more complete, than thoſe I received. Let him figure to himſelf, if he can, my ſituation, ſick in bed, worn out by intenſe application, and dying, as every body thought, a martyr in the cauſe to which I had devoted myſelf;—let him imagine, I ſay, my feelings, upon hearing the confuſed noiſe of the prayers of a multitude of people, who were paſſing by in the ſtreets, upon being told, that it was the Poor of Munich, many hundreds in number, who were going in proceſſion to the church to put up public prayers for me:—public prayers for me!—for a private perſon;—a ſtranger!—a proteſtant!—I believe it is the firſt inſtance of the kind that ever happened;—and I dare venture to affirm that no proof could well be ſtronger than this, that the meaſures adopted for making theſe poor people happy, were really ſucceſsful;—and let it be remembered, *that this fact is what I am moſt anxious to make appear*, IN THE CLEAREST AND MOST SATISFACTORY MANNER.

CHAP. VIII.

Of the Means uſed for the Relief of thoſe poor Perſons who were not Beggars.—Of the large Sums of Money diſtributed to the Poor in Alms.—Of the Means uſed for rendering thoſe who received Alms induſtrious.—Of the general Utility of the Houſe of Induſtry to the Poor, and the Diſtreſſed of all Denominations.—Of Public Kitchens for feeding the Poor, united with Eſtabliſhments for giving them Employment; and of the great Advantages which would be derived from forming them in every Pariſh.—Of the Manner in which the Poor of Munich are lodged.

IN giving an account of the Poor of Munich, I have hitherto confined myſelf chiefly to one claſs of them,—the beggars; but I ſhall now proceed to mention briefly the meaſures which were adopted to relieve others, who never were beggars, from thoſe diſtreſſes and difficulties in which poverty and the inability to provide the neceſſaries of life had involved them.

An eſtabliſhment for the Poor ſhould not only provide for the relief and ſupport of thoſe who are moſt forward and clamorous in calling out for aſſiſtance;—humanity and juſtice require that peculiar attention ſhould be paid to thoſe who are baſhful and ſilent. To thoſe, who, in addition to all

all the diſtreſſes ariſing from poverty and want, feel, what is ſtill more inſupportable, the ſhame and mortifying degradation attached to their unfortunate and hopeleſs ſituation.

All thoſe who ſtood in need of aſſiſtance were invited and encouraged to make known their wants to the committee placed at the head of the inſtitution; and in no caſe was the neceſſary aſſiſtance refuſed.—That this relief was generouſly beſtowed, will not be doubted by thoſe who are informed that the ſums diſtributed in alms, *in ready money*, to the Poor of Munich in *five years*, excluſive of the expences incurred in feeding and clothing them, amounted to above *two hundred thouſand florins* *.

But the ſums of money diſtributed among the Poor in alms were not the only, and perhaps not the moſt important aſſiſtance that was given them.—*They were taught and encouraged to be induſtrious*; and they probably derived more eſſential advantages from the fruits of their induſtry, than from all the charitable donations they received.

All who were able to earn any thing by their labour, were furniſhed with work, and effectual meaſures taken to excite them to be induſtrious.—In fixing the amount of the ſums in money, which they receive weekly upon ſtated days, care was always taken to find out how much the perſon applying for relief was in a condition to earn, and only juſt ſo much was granted,

* Above 18,000 pounds ſterling.

as

as, when added to theſe earnings, would be ſufficient to provide the neceſſaries of life, or ſuch of them as were not otherwiſe furniſhed by the inſtitution.—But even this precaution would not alone have been ſufficient to have obliged thoſe who were diſpoſed to be idle, to become induſtrious; for with the aſſiſtance of the ſmall allowances which were granted, they might have found means, by ſtealing, or other fraudulent practices, to have ſubſiſted without working, and the ſums allowed them would only have ſerved as an encouragement to idleneſs.—This evil, which is always much to be apprehended in eſtabliſhments for the Poor, and which is always moſt fatal in its conſequences, is effectually prevented at Munich by the following ſimple arrangement:—A long and narrow ſlip of paper, upon which is printed, between parallel lines, in two or more columns, all the weeks in the year, or rather the month, and the day of the month, when each week begins, is, in the beginning of every year, given to each poor perſon entitled to receive alms; and the name of the perſon,—with the number his name bears in the general liſt of the Poor;—the weekly ſum granted to him,—and the ſum he is able to earn weekly by labour, are entered in writing at the head of this liſt of the weeks. This paper, which muſt always be produced by the poor perſon as often as he applies for his weekly allowance of alms, ſerves to ſhew whether he has or has not fulfilled the conditions upon which the allowance was granted him;—that is to ſay, whether he has been induſ-

trious, and has earned by his labour, and received, the ſum he ought to earn weekly.—This fact is aſcertained in the following manner: when the poor perſon frequents the houſe of induſtry regularly, or when he works at home, and delivers regularly at the end of every week, the produce of the labour he is expected to perform; when he has thus fulfilled the conditions impoſed on him, the column, or rather parallel, in his paper, (which may be called his certificate of induſtry,) anſwering to the week in queſtion, is marked with a ſtamp, kept for that purpoſe at the Military Work-houſe; or, if he ſhould be prevented by illneſs, or any other accident, from fulfilling thoſe conditions, in that caſe, inſtead of the ſtamp, the week muſt be marked by the ſignature of the commiſſary of the diſtrict to which the poor perſon belongs. But, if the certificate be not marked, either by the ſtamp of the houſe of induſtry, or by the ſignature of the commiſſary of the diſtrict, the allowance for the week in queſtion is not iſſued.

It is eaſily to be imagined how effectually this arrangement muſt operate as a check to idleneſs.—But, not ſatisfied with diſcouraging and puniſhing idleneſs, we have endeavoured, by all the means in our power, and more eſpecially by rewards and honourable diſtinctions of every kind, to encourage extraordinary exertions of induſtry. Such of the Poor who earn more in the week than the ſum impoſed on them, are rewarded by extraordinary preſents, in money, or in ſome uſeful and valuable article of clothing; or they are particularly remembered

bered at the next public diſtribution of money, which is made twice a year to the Poor, to aſſiſt them in paying their houſe-rent: and ſo far is this from being made a pretext for diminiſhing their weekly allowance of alms, that it is rather conſidered as a reaſon for augmenting them.

There are great numbers of perſons, of various deſcriptions, in all places, and particularly in great towns, who, though they find means juſt to ſupport life, and have too much feeling ever to ſubmit to the diſgrace of becoming a burthen upon the public, are yet very unhappy, and conſequently objects highly deſerving of the commiſeration and friendly aid of the humane and generous. —It is hardly poſſible to imagine a ſituation more truly deplorable than that of a perſon born to better proſpects, reduced by unmerited misfortunes to poverty, and doomed to paſs his whole life in one continued and hopeleſs ſtruggle with want, ſhame, and deſpair.

Any relief which it is poſſible to afford to diſtreſs that appears under this reſpectable and moſt intereſting form, ought ſurely never to be with-held. —But the greateſt care and precaution are neceſſary in giving aſſiſtance to thoſe who have been rendered irritable and ſuſpicious by misfortunes, and who have too much honeſt pride not to feel themſelves degraded by accepting an obligation they never can hope to repay.

The eſtabliſhment of the houſe of induſtry at Munich has been a means of affording very eſſential relief to many diſtreſſed families, and ſingle

perſons in indigent circumſtances, who, otherwiſe, moſt probably never would have received any aſſiſtance.—Many perſons of diſtinguiſhed birth, and particularly widows and unmarried ladies with very ſmall fortunes, frequently ſend privately to this houſe for raw materials,—flax or wool,—which they ſpin, and return in yarn,—linen for ſoldiers' ſhirts, which they make up, &c. and receive in money, (commonly through the hands of a maid ſervant, who is employed as a meſſenger upon theſe occaſions,) the amount of the wages at the ordinary price paid by the manufactory, for the labour performed.

Many a common ſoldier in the Elector's ſervice wears ſhirts made up privately by the delicate hands of perſons who were never ſeen publicly to be employed in ſuch coarſe work;—and many a comfortable meal has been made in the town of Munich, in private, by perſons accuſtomed to more ſumptuous fare, upon the ſoup deſtined for the Poor, and furniſhed *gratis* from the public kitchen of the houſe of induſtry. Many others who ſtand in need of aſſiſtance, will, in time, I hope, get the better of their pride, and avail themſelves of theſe advantages.

To render this eſtabliſhment for the Poor at Munich perfect, ſomething is ſtill wanting.—The houſe of induſtry is too remote from the center of the town, and many of the Poor live at ſuch a diſtance from it, that much time is loſt in going and returning.—It is ſituated, it is true, nearly in the center of the diſtrict in which moſt of the Poor inhabit,

inhabit, but ſtill there are many who do not derive all the advantages from it they otherwiſe would do were it adjacent to their dwellings. The only way to remedy this imperfection would be, to eſtabliſh ſeveral ſmaller public kitchens in different parts of the town, with two or three rooms adjoining to each, where the Poor might work.—They might then either fetch the raw materials from the principal houſe of induſtry, or be furniſhed with them by the perſons who ſuperintend thoſe ſubordinate kitchens; and who might ſerve at the ſame time as ſtewards and inſpectors of the working rooms, under the direction and control of the officers who are placed at the head of the general eſtabliſhment. This arrangement is in contemplation, and will be put in execution as ſoon as convenient houſes can be procured and fitted up for the purpoſe.

In large cities, theſe public kitchens, and rooms adjoining to them for working, ſhould be eſtabliſhed in every pariſh; and, it is ſcarcely to be conceived how much this arrangement would contribute to the comfort and contentment of the Poor, and to the improvement of their morals. Theſe working rooms might be fitted up with neatneſs; and even with elegance; and made perfectly warm, clean, and comfortable, at a very ſmall expence; and, if nothing were done to diſguſt the Poor, either by treating them harſhly, or uſing *force* to oblige them to frequent theſe eſtabliſhments, they would ſoon avail themſelves of the advantages held out to them; and the tranquillity they would enjoy in

theſe peaceful retreats, would, by degrees, calm the agitation of their minds,—remove their ſuſpicions,—and render them happy,—grateful, and docile.

Though it might not be poſſible to provide any other lodgings for them than the miſerable barracks they now occupy, yet, as they might ſpend the whole of the day, from morning till late at night, in theſe public rooms, and have no occaſion to return to their homes till bed-time, they would not experience much inconvenience from the badneſs of the accommodation at their own dwellings.

Should any be attacked with ſickneſs, they might be ſent to ſome hoſpital, or rooms be provided for them, as well as for the old and infirm, adjacent to the public working rooms. Certain hours might alſo be ſet apart for inſtructing the children, daily, in reading and writing, in the dining-hall, or in ſome other room convenient for that purpoſe.

The expence of forming ſuch an eſtabliſhment in every pariſh would not be great, in the firſt outſet, and the advantages derived from it, would very ſoon repay that expence, with intereſt.—The Poor might be fed from a public kitchen for *leſs than half* what it would coſt them to feed themſelves;—they would turn their induſtry to better account, by working in a public eſtabliſhment, and under proper direction, than by working at home;—a ſpirit of emulation would be excited among them, and they would paſs their time more agreeably and cheerfully.—They would be entirely relieved

relieved from the heavy expence of fuel for cooking; and in a great meaſure, from that for heating their dwellings; and being ſeldom at home in the day-time, would want little more than a place to ſleep in; ſo that the expence of lodging might be greatly diminiſhed. It is evident, that all theſe ſavings together would operate very powerfully to leſſen the public expence for the maintenance of the Poor; and, were proper meaſures adopted, and purſued with care and perſeverance, I am perſuaded the expence would at laſt be reduced to little or nothing.

With regard to lodgings for the Poor, I am clearly of opinion that it is in general beſt, particularly in great towns, that theſe ſhould be left for themſelves to provide. This they certainly would like better than being crowded together, and confined like priſoners in poor-houſes and hoſpitals; and I really think the difference in the expence would be inconſiderable; and though they might be leſs comfortably accommodated, yet the inconvenience would be amply compenſated *by the charms which liberty diſpenſes.*

In Munich, almoſt all the Poor provide their own lodgings; and twice a year have certain allowances in money, to aſſiſt them in paying their rent. —Many among them who are ſingle, have, indeed, no lodgings they can call their own. They go to certain public-houſes to ſleep, where they are furniſhed with what is called a bed, in a garret, for one creutzer, (equal to about one-third of a penny,) a-night; and for two creutzers a-night they

get a place in a tolerable good bed in a decent room in a public-houſe of more repute.

There are, however, among the Poor, many who are infirm, and not able to ſhift for themſelves in the public-houſes, and have not families, or near relations, to take care of them. For theſe, a particular arrangement has lately been made at Munich. Such of them as have friends or acquaintances in town with whom they can lodge, are permitted to do ſo; but if they cannot find out lodgings themſelves, they have their option, either to be placed in ſome private family to be taken care of, or go to a houſe which has lately been purchaſed and fitted up as an hoſpital for lodging them *.

This houſe is ſituated in a fine airy ſituation, on a ſmall eminence upon the banks of the Iſar, and overlooks the whole town,—the plain in which it is ſituated,—and the river.—It is neatly built, and has a ſpacious garden belonging to it. There are ſeventeen good rooms in the houſe; in which it is ſuppoſed about eighty perſons may be lodged. Theſe will all be fed from one kitchen; and ſuch of them who are very infirm, will have others leſs infirm placed in the ſame room with them, to aſſiſt them, and wait upon them. The cultivation of the garden will be their amuſement,

* The committee, at the head of the eſtabliſhment, has been enabled to make this purchaſe by legacies made to the inſtitution. Theſe legacies have been numerous, and are increaſing every day; which clearly ſhews, that the meaſures adopted with regard to the Poor have met with the approbation of the public.

and

and the produce of it their property.—They will be furniſhed with work ſuitable to their ſtrength; and for all the labour they perform, will be paid in money, which will be left at their own diſpoſal.—They will be furniſhed with food, medicine, and clothing, *gratis*; and to thoſe who are not able to earn any thing by labour, a ſmall ſum of money will be given weekly, to enable them to purchaſe tobacco, ſnuff, or any other article of humble luxury to which they may have been accuſtomed.

I could have wiſhed that this aſylum had been nearer to the houſe of induſtry. It is indeed not very far from it, perhaps not more than 400 yards; but ſtill that is too far.—Had it been under the ſame roof, or adjoining to it, thoſe who are lodged in it might have been fed from the public kitchen of the general eſtabliſhment, and have been under the immediate inſpection of the principal officers of the houſe of induſtry. It would likewiſe have rendered the eſtabliſhment *very intereſting* to thoſe who viſit it; which is an object of more real importance than can well be imagined by thoſe who have not had occaſion to know how much the approbation and *applauſe* of the public facilitate difficult enterprizes.

The means of uniting the rational amuſement of ſociety, with the furtherance of ſchemes calculated for the promotion of public good, is a ſubject highly deſerving the attention of all who are engaged in public affairs.

CHAP. IX.

Of the Means uſed for extending the Influence of the Inſtitution for the Poor at Munich, to other Parts of Bavaria.—Of the Progreſs which ſome of the Improvements introduced at Munich are making in other Countries.

THOUGH the inſtitution of which I have undertaken to give an account, was confined to the city of Munich and its ſuburbs, yet meaſures were taken to extend its influence to all parts of the country.

The attempt, to put an end to mendicity in the capital, and to give employment to the Poor, having been completely ſucceſsful, this event was formally announced to the public, in the news-papers; and other towns were called upon to follow the example. Not only a narrative in detail was given of all the different meaſures purſued in this important undertaking, but every kind of information and aſſiſtance was afforded on the part of the inſtitution at Munich, to all who might be diſpoſed to engage in forming ſimilar eſtabliſhments in other parts of the country.

Copies of all the different liſts, returns, certificates, &c. uſed in the management of the Poor, were given *gratis* to all ſtrangers as well as inhabitants of the country, who applied for them; and

no

no information relative to the eſtabliſhment, or to any of its details, was ever refuſed.

The houſe of induſtry was open every day from morning till night to all viſitors; and perſons were appointed to accompany ſtrangers in their tour through the different apartments, and to give the fulleſt information relative to the details, and even to all the ſecrets of the various manufactures carried on; and printed copies of the different tables, tickets, checks, &c. made uſe of in carrying on the current buſineſs of the houſe, were furniſhed to every one who aſked for them; together with an account of the manner in which theſe were uſed, and of the other meaſures adopted to prevent frauds and peculation in the various branches of this extenſive eſtabliſhment.

As few manufactures in Bavaria are carried on to any extent, the more indigent of the inhabitants are, in general, ſo totally unacquainted with every kind of work in which the poor could be moſt uſefully employed, that, that circumſtance alone is a great obſtacle to the general introduction throughout the country of the meaſures adopted in Munich for employing the Poor. To remove this difficulty, the different towns and communities who are deſirous of forming eſtabliſhments for giving employment to the Poor, are invited to ſend perſons properly qualified to the houſe of induſtry at Munich, where they may be taught *gratis*, ſpinning in its various branches; knitting; ſewing, &c. in order to qualify them to become inſtructors

inſtructors to the Poor on their return home. And even inſtructors already formed, and poſſeſſing all the requiſite qualifications for ſuch an office, are ordered to be furniſhed by the houſe of induſtry in Munich to ſuch communities as ſhall apply for them.

Another difficulty, apparently not leſs weighty than that juſt mentioned, but which is more eaſily and more effectually removed, is the embarraſſment many of the ſmaller communities are likely to be under in procuring raw materials, and in ſelling to advantage the goods manufactured, or, (as is commonly the caſe,) *in part only manufactured*, by the Poor. The yarn, for inſtance, which is ſpun by them in a country-town or village, far removed from any manufacture of cloth, may lie on hand a long time before it can be ſold to advantage. To remedy this, the houſe of induſtry at Munich is ordered to furniſh raw materials to ſuch communities as ſhall apply for them, and receive in return the goods manufactured, at the full prices paid for the ſame articles in Munich.

Not only theſe meaſures, and many others of a ſimilar nature, are taken, to facilitate the introduction of induſtry among the Poor throughout the country; but every encouragement is held out to induce individuals to exert themſelves in this laudable undertaking. Thoſe communities which are the firſt to follow the example of the capital, are honourably mentioned in the news-papers; and ſuch individuals as diſtinguiſh themſelves by their

zeal

zeal and activity upon thoſe occaſions, are praiſed and rewarded.

A worthy curate, (Mr. Lechner,) preacher in one of the churches in Munich, who, of his own accord, had taken upon himſelf to defend the meaſures adopted with regard to the Poor, and to recommend them in the moſt earneſt manner from the pulpit, was ſent for by the elector into his cloſet, and thanked for his exertions.

This tranſaction being immediately made known, (an account of it having been publiſhed in the news-papers,) tended not a little to engage the clergy in all parts of the country to exert themſelves in ſupport of the inſtitution.

It is not my intention to inſinuate that the clergy in Bavaria ſtood in need of any ſuch motive to ſtimulate them to action in a cauſe ſo important to the happineſs and well-being of mankind, and conſequently ſo nearly connected with the ſacred duties of their office;—on the contrary, I ſhould be wanting in candour, as well as gratitude, were I not to embrace this opportunity of expreſſing publicly, the obligations I feel myſelf under to them for their ſupport and aſſiſtance.

The number of excellent ſermons which have been preached, in order to recommend the meaſures adopted by the government for making proviſion for the Poor, ſhew how much this uſeful and reſpectable body of men have had it at heart to contribute to the ſucceſs of this important meaſure; and their readineſs to co-operate with me, (a Proteſtant,) upon all occaſions where their

aſſiſtance has been aſked, not only does honour to the liberality of their ſentiments, but calls for my perſonal acknowledgments, and particular thanks.

I ſhall conclude this Eſſay with an account of the progreſs which ſome of the improvements introduced at Munich are now making in other countries.

During my late journey in Italy for the recovery of my health, I viſited Verona; and becoming acquainted with the principal directors of two large and noble hoſpitals, *la Pièta* and *la Miſericordia*, in that city, the former containing about 350, and the latter near 500 Poor, I had frequent occaſions to converſe with them upon the ſubject of thoſe eſtabliſhments, and to give them an account of the arrangements that had been made at Munich. I likewiſe took the liberty of propoſing ſome improvements, and particularly in regard to the arrangements for feeding theſe Poor; and in the management of the fires employed for cooking. Firewood, the only fuel uſed in that country, is extremely ſcarce and dear, and made a very heavy article in the expences of thoſe inſtitutions.

Though this ſcarcity of fuel, which had prevailed for ages in that part of Italy, had rendered it neceſſary to pay attention to the economy of fuel, and had occaſioned ſome improvements to be made in the management of heat; yet I found, upon examining the kitchens of theſe two hoſpitals, and comparing the quantities of fuel conſumed with the quantities of victuals cooked, that

ſeven-

ſeven-eighths of the fire-wood they were then conſuming might be ſaved*. Having communicated the reſult of thoſe enquiries to the directors of theſe two hoſpitals, and offered my ſervice to alter the kitchens, and arrange them upon the principles of that in the houſe of induſtry at Munich, (which I deſcribed to them,) they accepted my offer, and the kitchens were rebuilt under my immediate direction; and have both ſucceeded, even beyond my moſt ſanguine expectations. That of the hoſpital of *la Pièta* is the moſt complete kitchen I have ever built; and I would recommend it as a model, in preference to any I have ever ſeen. I ſhall give a more particular deſcription of it, with plans and eſtimates, in my Eſſay on the Management of Heat.

During the time I was employed in building the new kitchen in the hoſpital of *la Pièta*, I had an opportunity of making myſelf acquainted with all the details of the clothing of the Poor belonging to that eſtabliſhment; and I found that very great ſavings might be made in that article of expence. I made a propoſal to the directors of that hoſpital, to furniſh them with clothing for their Poor, ready made up, from the houſe of induſtry at Munich; and upon my return to Munich I ſent them *twelve* complete ſuits of clothing of different ſizes as a ſample, and accompanied them with an eſtimate of the prices at which we could afford to deliver them at Verona.

* I found upon examining the famous kitchen of the great hoſpital at Florence, that the waſte of fuel there is ſtill greater.

The

The ſucceſs of this little adventure has been very flattering, and has opened a very intereſting channel for commerce, and for the encouragement of induſtry in Bavaria. This ſample of clothing being approved, and, with all the expences of carriage added, being found to be near *twenty per cent.* cheaper than that formerly uſed, orders have been received from Italy by the houſe of induſtry at Munich, to a conſiderable amount, for clothing the Poor. In the beginning of September laſt, a few days before I left Munich to come to England, I had the pleaſure to aſſiſt in packing up and ſending off, over the Alps, by the Tyrol, SIX HUNDRED articles of clothing of different kinds for the Poor of Verona; and hope ſoon to ſee the Poor of Bavaria growing rich, by manufacturing clothing for the Poor of Italy.

END OF THE FIRST ESSAY.

ESSAY II.

OF THE

FUNDAMENTAL PRINCIPLES

ON WHICH

GENERAL ESTABLISHMENTS for the RELIEF of the POOR may be formed in all Countries.

ESSAY II.

CHAP. I.

General View of the Subject.—Deplorable State of thoſe who are reduced to Poverty.—No Body of Laws can be ſo framed as to provide efficaciouſly for their Wants.—Only adequate Relief that can be afforded them muſt be derived from the voluntary Aſſiſtance of the Humane and Benevolent.—How that Aſſiſtance is to be ſecured.—Objections to the Expence of taking care of the Poor anſwered—Of the Means of introducing a Scheme for the Relief of the Poor.

THOUGH the fundamental principles upon which the Eſtabliſhment for the Poor at Munich is founded, are ſuch as I can venture to recommend; and notwithſtanding the fulleſt information relative to every part of that Eſtabliſhment may, I believe, be collected from the account of it which is given in the foregoing Eſſay; yet, as this information is ſo diſperſed in different parts of the work, and ſo blended with a variety of other particulars, that the reader would find ſome difficulty in bringing the whole into one view, and arranging it ſyſtematically in a complete whole; I ſhall endeavour briefly

to reſume the ſubject, and give the reſult of all my enquiries relative to it, in a more conciſe, methodical, and more uſeful form: and as a difference in the local circumſtances under which an operation is performed, muſt neceſſarily require certain modifications of the plan, I ſhall endeavour to take due notice of every modification which may appear to me to be neceſſary *.

But before we enter upon thoſe details, it may be proper to take an extenſive ſurvey of the ſubject, and to inveſtigate the general and fundamental Principles on which an Eſtabliſhment for the Relief of the Poor, in every country, ought to be founded; and at the ſame time to conſider the difficulties which are generally underſtood to be inſeparable from ſuch an undertaking, and to endeavour to ſhow that they are by no means inſurmountable.

That degree of poverty which involves in it the inability to procure the neceſſaries of life without the charitable aſſiſtance of the Public, is, doubtleſs, the heavieſt of all misfortunes; for it not only brings along with it the greateſt phyſical evils—pain and diſeaſe; but it is attended by the moſt mortifying

* The Engliſh Reader is deſired to bear in mind, that the Author of this Eſſay, though an Engliſhman, is reſident in Germany; and that his connections with that country render it neceſſary for him to pay particular attention to its circumſtances, in treating a ſubject which he is deſirous of rendering generally uſeful. There is ſtill another reaſon, which renders it neceſſary for him to have continually in view, in this Treatiſe, the ſituation of the Poor upon the Continent, and that it is an engagement which he has laid himſelf under to write upon that ſubject.

humili-

humiliation, and hopeleſs deſpondency. It is, moreover, an incurable evil; and is rather irritated than alleviated by the remedies commonly applied to remove it. The only alleviation, of which it is capable, muſt be derived from the kind and ſoothing attentions of the truly benevolent. This is the only balm which can ſooth the anguiſh of a wounded heart, or allay the agitations of a mind irritated by diſappointment, and rendered ferocious by deſpair.

And hence it evidently appears that no body of laws, however wiſely framed, can, in any country, effectually provide for the relief of the Poor, without the voluntary aſſiſtance of individuals; for though taxes may be levied by authority of the laws for the ſupport of the Poor, yet thoſe kind attentions which are ſo neceſſary in the management of the Poor, as well to reclaim the vicious, as to comfort and encourage the deſpondent—thoſe demonſtrations of concern which are always ſo great a conſolation to perſons in diſtreſs—cannot be *commanded by force*. On the contrary, every attempt to uſe *force* in ſuch caſes, ſeldom fails to produce conſequences directly contrary to thoſe intended *.

But if the only effectual relief for the diſtreſſes of the Poor, and the ſovereign remedy for the nu-

* The only ſtep which, in my opinion, it would be either neceſſary, or prudent, for the legiſlature to take in any country where an Eſtabliſhment for the Poor is to be formed, is to *recommend* to the Public a good plan for ſuch an Eſtabliſhment, and repeal, or alter all ſuch of the exiſting laws as might render the introduction of it difficult or impoſſible.

merous evils to ſociety which ariſe from the prevalence of mendicity, indolence, poverty, and miſery, among the lower claſſes of ſociety, muſt be derived from the charitable and voluntary exertions of individuals;—as the aſſiſtance of the Public cannot be expected, unleſs the moſt unlimited confidence can be placed, not only in the wiſdom of the meaſures propoſed, but alſo, and *more eſpecially*, in the *uprightneſs*, *zeal*, and *perfect diſintereſtedneſs* of the perſons appointed to carry them into execution; it is evident that the firſt object to be attended to, in forming an extenſive plan of providing for the Poor, is to make ſuch arrangements as will *command the confidence of the Public*, and fix it upon the moſt ſolid and durable foundation.

This can moſt certainly, and moſt effectually be done; *firſt*, by engaging perſons of high rank and the moſt reſpectable character to place themſelves at the head of the Eſtabliſhment:—*ſecondly*, by joining, in the general adminiſtration of the affairs of the Eſtabliſhment, a certain number of perſons choſen from the middling claſs of ſociety; reputable tradeſmen, in eaſy circumſtances;—heads of families;—and others of known integrity and of humane diſpoſitions *:—*thirdly*, by engaging all thoſe who are employed in the adminiſtration of the affairs of the Poor, to ſerve without fee or reward:—*fourthly*, by publiſhing, at ſtated periods, ſuch particular and authentic accounts of all receipts

* This is an object of the utmoſt importance, and the ſucceſs of the undertaking will depend in a great meaſure on the attention that is paid to it.

and

and expenditures, that no doubt can poſſibly be entertained by the Public reſpecting the proper appliſtion of the monies deſtined for the relief of the Poor:—*fifthly*, by publiſhing an alphabetical liſt of all who receive alms; in which liſt ſhould be inſerted, not only the name of the perſon; his age; condition; and place of abode; but alſo the amount of the weekly aſſiſtance granted to him; in order that thoſe who entertain any doubts reſpecting the manner in which the Poor are provided for, may have an opportunity of viſiting them at their habitations, and making enquiry into their real ſituations: —and *laſtly*, the confidence of the Public, and the continuance of their ſupport, will moſt effectually be ſecured by a prompt and ſucceſsful execution of the plan adopted.

There is ſcarcely a greater plague that can infeſt ſociety, than ſwarms of beggars; and the inconveniencies to individuals ariſing from them are ſo generally, and ſo ſeverely felt, that relief from ſo great an evil cannot fail to produce a powerful and laſting effect upon the minds of the Public, and to engage all ranks to unite in the ſupport of meaſures as conducive to the comfort of individuals, as they are eſſential to the national honor and reputation. And even in countries where the Poor do not make a practice of begging, the knowledge of their ſufferings muſt be painful to every benevolent mind; and there is no perſon, I would hope, ſo callous to the feelings of humanity, as not to rejoice moſt ſincerely when effectual relief is afforded.

The greateſt difficulty attending the introduction of any meaſure founded upon the voluntary ſupport of the Public, for maintaining the Poor, and putting an end to mendicity, is an opinion generally entertained, that a very heavy expence would be indiſpenſably neceſſary to carry into execution ſuch an undertaking. But this difficulty may be ſpeedily removed by ſhowing, (which may eaſily be done,) that the execution of a well-arranged plan for providing for the Poor, and giving uſeful employment to the idle and indolent, ſo far from being expenſive, muſt, in the end, be attended with a very conſiderable ſaving, not only to the Public collectively, but alſo to individuals.

Thoſe who now extort their ſubſiſtence by begging and ſtealing, are, in fact, already maintained by the Public. But this is not all; they are maintained in a manner the moſt expenſive and troubleſome, to themſelves and the Public, that can be conceived; and this may be ſaid of all the Poor in general.

A poor perſon, who lives in poverty and miſery, and merely from hand to mouth, has not the power of availing himſelf of any of thoſe economical arrangements, in procuring the neceſſaries of life, which others, in more affluent circumſtances, may employ; and which may be employed with peculiar advantage in a public Eſtabliſhment.—Added to this, the greater part of the Poor, as well thoſe who make a profeſſion of begging, as others who do not, might be uſefully employed in various kinds of labour; and ſuppoſing them, one with another,

to

to be capable of earning *only half* as much as is neceſſary to their ſubſiſtence, this would reduce the preſent expence to the Public for their maintenance at leaſt one half; and this half might be reduced ſtill much lower, by a proper attention to order and economy in providing for their ſubſiſtence.

Were the inhabitants of a large town where mendicity is prevalent, to ſubſcribe only half the ſums annually, which are extorted from them by beggars, I am confident it would be quite ſufficient, with a proper arrangement, for the comfortable ſupport of the Poor of all denominations.

Not only thoſe who were formerly common ſtreet-beggars, but all others, without exception, who receive alms, in the city of Munich and its ſuburbs, amounting at this time to more than 1800 perſons, are ſupported almoſt entirely by voluntary ſubſcriptions from the inhabitants; and I have been aſſured by numbers of the moſt opulent and reſpectable citizens, that the ſums annually extorted from them formerly by beggars alone, excluſive of private charities, amounted to more than three times the ſums now given by them to the ſupport of the new inſtitution.

I inſiſt the more upon this point, as I know that the great expence which has been ſuppoſed to be indiſpenſably neceſſary to carry into execution any ſcheme for effectually providing for the Poor, and putting an end to mendicity, has deterred many well-diſpoſed perſons from engaging in ſo uſeful an enterpriſe. I have only to add my moſt earneſt wiſhes, that what I have ſaid and done, may remove every

every doubt, and re-animate the zeal of the Public, in a cauſe in which the deareſt intereſts of humanity are ſo nearly concerned.

In almoſt every public undertaking, which is to be carried into effect by the united voluntary exertions of individuals, without the interference of government, there is a degree of awkardneſs in bringing forward the buſineſs, which it is difficult to avoid, and which is frequently not a little embarraſſing. This will doubtleſs be felt by thoſe who engage in forming and executing ſchemes for providing for the Poor by private ſubſcription; they ſhould not, however, ſuffer themſelves to be diſcouraged by a difficulty which may ſo eaſily be ſurmounted.

In the introduction of every ſcheme for forming an Eſtabliſhment for the Poor, whether it be propoſed to defray the expence by voluntary ſubſcriptions, or by a tax levied for the purpoſe, it will be proper for the authors or promoters of the meaſure to addreſs the Public upon the ſubject; to inform them of the nature of the meaſures propoſed;—of their tendency to promote the public welfare, and to point out the various ways in which individuals may give their aſſiſtance to render the ſcheme ſucceſsful.

There are few cities in Europe, I believe, in which the ſtate of the Poor would juſtify ſuch an addreſs as that which was publiſhed at Munich upon taking up the beggars in that town; but ſomething of the kind; with ſuch alterations as local circumſtances may require, I am perſuaded, would

would in moſt caſes produce good effects. With regard to the aſſiſtance that might be given by individuals to carry into effect a ſcheme for providing for the Poor, though meaſures for that purpoſe may, and ought to be ſo taken, that the Public would have little or no trouble in their execution, yet there are many things which individuals muſt be inſtructed cautiouſly *to avoid;* otherwiſe the enterpriſe will be extremely difficult, if not impracticable; and, above all things, they muſt be warned againſt giving alms to beggars.

Though nothing would be more unjuſt and tyrannical, than to prevent the generous and humane from contributing to the relief of the Poor and neceſſitous, yet, as giving alms to beggars tends ſo directly and ſo powerfully to encourage idleneſs and immorality, to diſcourage the induſtrious Poor, and perpetuate mendicity, with all its attendant evils, too much pains cannot be taken to guard the Public againſt a practice ſo fatal in its conſequences to ſociety.

All who are deſirous of contributing to the relief of the Poor, ſhould be invited to ſend their charitable donations to be diſtributed by thoſe who, being at the head of a public Inſtitution eſtabliſhed for taking care of the Poor, muſt be ſuppoſed beſt acquainted with their wants. Or, if individuals ſhould prefer diſtributing their own charities, they ought at leaſt to take the trouble to enquire after fit objects; and to apply their donations in ſuch a manner as not to counteract the meaſures of a public and uſeful Eſtabliſhment.

But,

But, before I enter farther into theſe details, it will be neceſſary to determine the proper extent and limits of an Eſtabliſhment for the Poor; and ſhow how a town or city ought to be divided in diſtricts, in order to facilitate the purpoſes of ſuch an inſtitution.

CHAP II.

Of the Extent of an Eſtabliſhment for the Poor.—Of the Diviſion of a Town or City into Diſtricts.—Of the Manner of carrying on the Buſineſs of a public Eſtabliſhment for the Poor.—Of the Neceſſity of numbering all the Houſes in a Town where an Eſtabliſhment for the Poor is formed.

HOWEVER large a city may be, in which an Eſtabliſhment for the Poor is to be formed, I am clearly of opinion, that there ſhould be but *one Eſtabliſhment*;—with *one* committee for the general management of all it's affairs; and *one* treaſurer. This unity appears eſſentially neceſſary, not only becauſe, when all the parts tend to one common centre, and act in union to the ſame end, under one direction, they are leſs liable to be impeded in their operations, or diſordered by colliſion;—but alſo on account of *the very unequal diſtribution of wealth*, as well as of miſery and poverty, in the different diſtricts of the ſame town. Some pariſhes in great cities have comparatively few Poor, while others, perhaps leſs opulent, are overburthened with them; and there ſeems to be no good reaſon

why a houſekeeper in any town ſhould be called upon to pay more or leſs for the ſupport of the Poor, becauſe he happens to live on one ſide of a ſtreet or the other. Added to this, there are certain diſtricts in moſt great towns where poverty and miſery ſeem to have fixed their head-quarters, and where it would be *impoſſible* for the inhabitants to ſupport the expence of maintaining their Poor. Where that is the caſe, as meaſures for preventing mendicity in every town muſt be general, in order to their being ſucceſsful, the enterpriſe, *from that circumſtance alone*, would be rendered impracticable, were the aſſiſtance of the more opulent diſtricts to be refuſed.

There is a diſtrict, for inſtance, belonging to Munich, (the Au,) a very large pariſh, which may be called the St. Giles's of that city, where the alms annually received are *twenty times* as much as the whole diſtrict contributes to the funds of the public Inſtitution for the Poor.—The inhabitants of the other pariſhes, however, have never conſidered it a hardſhip to them, that the Poor of the Au ſhould be admitted to ſhare the public bounty, in common with the Poor of the other pariſhes.

Every town muſt be divided, according to its extent, into a greater or leſs number of diſtricts, or ſubdiviſions; and each of theſe muſt have a committee of inſpection, or rather a commiſſary, with aſſiſtants, who muſt be entruſted with the ſuperintendence and management of all affairs relative to the relief and ſupport of the Poor within its limits.

In

In very large cities, as the details of a general Eſtabliſhment for the Poor would be very numerous and extenſive, it would probably facilitate the management of the affairs of the Eſtabliſhment, if, beſide the ſmalleſt ſubdiviſions or diſtricts, there could be formed other larger diviſions, compoſed of a certain number of diſtricts, and put under the direction of particular committees.

The moſt natural, and perhaps the moſt convenient method of dividing a large city or town, for the purpoſe of introducing a general Eſtabliſhment for the Poor, would be, to form of the pariſhes the primary diviſions; and to divide each pariſh into ſo many ſubdiviſions, or diſtricts, as that each diſtrict may conſiſt of from 3000 to 4000 inhabitants. Though the immediate inſpection and general ſuperintendence of the affairs of each pariſh were to be left to its own particular committee, yet the ſupreme committee at the head of the general Inſtitution ſhould not only exerciſe a controlling power over the parochial committees, but theſe laſt ſhould not be impowered to levy money upon the pariſhioners, by ſetting on foot voluntary ſubſcriptions, or otherwiſe; or to diſpoſe of any ſums belonging to the general Inſtitution, except in caſes of urgent neceſſity;—nor ſhould they be permitted to introduce any new arrangements with reſpect to the management of the Poor, without the approbation and conſent of the ſupreme committee: the moſt perfect uniformity in the mode of treating the Poor, and tranſacting all public buſineſs relative to the Inſtitution,

tution, being indiſpenſably neceſſary to ſecure ſucceſs to the undertaking, and fix the Eſtabliſhment upon a firm and durable foundation.

For the ſame reaſons, all monies collected in the pariſhes ſhould not be received and diſpoſed of by their particular committees, but ought to be paid into the public treaſury of the Inſtitution, and carried to the general account of receipts;—and, in like manner, the ſums neceſſary for the ſupport of the Poor in each pariſh ſhould be furniſhed from the general treaſury, on the orders of the ſupreme committee.

With regard to the applications of individuals in diſtreſs for aſſiſtance, all ſuch applications ought to be made through the commiſſary of the diſtrict to the parochial committee;—and where the neceſſity is not urgent, and particularly where permanent aſſiſtance is required, the demand ſhould be referred by the parochial committee to the ſupreme committee, for their deciſion. In caſes of urgent neceſſity, the parochial committees, and even the commiſſaries of diſtricts, ſhould be authorized to adminiſter relief, *ex officio*, and without delay; for which purpoſe they ſhould be furniſhed with certain ſums in advance, to be afterwards accounted for by them.

That the ſupreme committee may be exactly informed of the real ſtate of thoſe in diſtreſs who apply for relief, every petition, forwarded by a parochial committee, or by a commiſſary of a diſtrict, where there are no parochial committees, ſhould be accompanied with an exact and detailed account

account of the circumſtances of the petitioner, ſigned by the commiſſary of the diſtrict to which he belongs, together with the amount of the weekly ſum, or other relief, which ſuch commiſſary may deem neceſſary for the ſupport of the petitioner.

To ſave the commiſſaries of diſtricts the trouble of writing the deſcriptions of the Poor who apply for aſſiſtance, printed forms, ſimilar to that which may be ſeen in the Appendix, No. V. may be furniſhed to them;—and other printed forms, of a like nature, may be introduced with great advantage in many other caſes in the management of the Poor.

With regard to the manner in which the ſupreme and parochial committees ſhould be formed;—however they may be compoſed, it will be indiſpenſably requiſite, for the preſervation of order and harmony in all the different parts of the Eſtabliſhment, that one member at leaſt of each parochial committee be preſent, and have a ſeat, and voice, as a member of the ſupreme committee. And, that all the members of each parochial committee may be equally well informed with regard to the general affairs of the Eſtabliſhment, it may perhaps be proper that thoſe members attend the meetings of the ſupreme committee in rotation.

For ſimilar reaſons it may be proper to invite the commiſſaries of diſtricts to be preſent in rotation at the meetings of the committees of their reſpective pariſhes, where there are parochial

committees eſtabliſhed, or otherwiſe, at the meetings of the ſupreme committee *.

It is, however, only in very large cities that I would recommend the forming parochial committees. In all towns where the inhabitants do not amount to more than 100,000 ſouls, I am clearly of opinion that it would be beſt merely to divide the town into diſtricts, without regard to the limits of pariſhes; and to direct all the affairs of the inſtitution by one ſimple committee. This mode was adopted at Munich, and found to be eaſy in practice, and ſucceſsful; and it is not without ſome degree of diffidence, I own, that I have ventured to propoſe a deviation from a plan, which has not yet been juſtified by experience.

But however a town may be divided into diſtricts, it will be abſolutely neceſſary that *all* the houſes be regularly numbered, and an accurate liſt made out of all the perſons who inhabit them. The propriety of this meaſure is too apparent to require any particular explanation. It is one of the very firſt ſteps that ought to be taken in carrying into execution any plan for forming an Eſtabliſhment for the Poor; it being as neceſſary to know the names and places of abode of thoſe, who, by voluntary ſubſcriptions, or otherwiſe, aſſiſt in re-

* This meaſure has been followed by the moſt ſalutary effects at Munich. The commiſſaries of diſtricts flattered by this diſtinction have exerted themſelves with uncommon zeal and aſſiduity in the diſcharge of the important duties of their office. And very important indeed is the office of a commiſſary of a diſtrict in the Eſtabliſhmen. for the Poor at Munich.

lieving

lieving the Poor, as to be acquainted with the dwellings of the objects themſelves; and this meaſure is as indiſpenſably neceſſary when an inſtitution for the Poor is formed in a ſmall country-town or village, as when it is formed in the largeſt capital.

In many caſes, it is probable, the eſtabliſhed laws of the country in which an inſtitution for the Poor may be formed, and certain uſages, the influence of which may perhaps be ſtill more powerful than the laws, may render many modifications neceſſary, which it is utterly impoſſible for me to foreſee; ſtill the great fundamental principles upon which every ſenſible plan for ſuch an Eſtabliſhment muſt be founded, appear to me to be certain and immutable; and when rightly underſtood, there can be no great difficulty in accommodating the plan to all thoſe particular circumſtances under which it may be carried into execution, without making any eſſential alteration.

CHAP. III.

General Direction of the Affairs of an Inſtitution for the Poor attended with no great Trouble.—Of the beſt Method of carrying on the current Buſineſs, and of the great Uſe of printed Forms, or Blanks.—Of the neceſſary Qualifications of thoſe who are placed at the Head of an Eſtabliſhment for the Relief of the Poor.—Great Importance of this Subject.—Cruelty and Impolicy of putting the Poor into the Hands of Perſons they cannot reſpect and love.—The Perſons pointed out who are more immediately called upon to come forward with Schemes for the Relief of the Poor, and to give their active Aſſiſtance in carrying them into Effect.

WHATEVER the number of diſtricts into which a city is divided, may be, or the number of committees employed in the management of a public Eſtabliſhment for the relief of the Poor, it is indiſpenſably neceſſary that all individuals who are employed in the undertaking be perſons of known integrity;—for courage is not more neceſſary in the character of a general, than unſhaken integrity in the character of a governor of a public charity. I inſiſt the more upon this point as the whole ſcheme is founded upon the voluntary aſſiſtance of individuals, and therefore to enſure its ſucceſs the moſt unlimited confidence of the public muſt

muſt be repoſed in thoſe who are to carry it into execution; beſides, I may add, that the manner in which the funds of the various public Eſtabliſhments for the relief of the Poor already inſtituted have commonly been adminiſtered in moſt countries, does not tend to render ſuperfluous the precautions I propoſe for ſecuring the confidence of the public.

The preceding obſervations reſpecting the importance of employing none but perſons of known integrity at the head of an inſtitution for the relief of the Poor, relates chiefly to the neceſſity of encouraging people in affluent circumſtances, and the public at large, to unite in the ſupport of ſuch an Eſtabliſhment.—There is alſo another reaſon, perhaps equally important, which renders it expedient to employ perſons of the moſt reſpectable character in the details of an inſtitution of public charity,—the good effects ſuch a choice muſt have upon the minds and morals of the Poor.

Perſons who are reduced to indigent circumſtances, and become objects of public charity, come under the direction of thoſe who are appointed to take care of them with minds weakened by adverſity, and ſoured by diſappointment; and finding themſelves ſeparated from the reſt of mankind, and cut off from all hope of ſeeing better days, they naturally grow peeviſh, and diſcontented, ſuſpicious of thoſe ſet over them, and of one another; and the kindeſt treatment, and moſt careful attention to every circumſtance that can render their ſituation ſupportable, are therefore required, to

prevent their being very unhappy. And nothing ſurely can contribute more powerfully to ſoothe the minds of perſons in ſuch unfortunate and hopeleſs circumſtances, than to find themſelves under the care and protection of perſons of gentle manners; —humane diſpoſitions;—and known probity and integrity; ſuch as even *they*,—with all their ſuſpicions about them, may venture to love and reſpect.

Whoever has taken the pains to inveſtigate the nature of the human mind, and to examine attentively thoſe circumſtances upon which human happineſs depends, muſt know how neceſſary it is to happineſs, that the mind ſhould have ſome object upon which to place its more tender affections—ſomething to love,—to cheriſh,—to eſteem,—to reſpect,—and to venerate; and theſe reſources are never ſo neceſſary as in the hour of adverſity and diſcouragement, where no ray of hope is left to cheer the proſpect, and ſtimulate to freſh exertion.

The lot of the Poor, particularly of thoſe who, from eaſy circumſtances and a reputable ſtation in ſociety, are reduced by misfortunes, or by oppreſſion, to become a burthen on the Public, is truly deplorable, after all that can be done for them:—and were we ſeriouſly to conſider their ſituation, I am ſure we ſhould think that we could never do too much to alleviate their ſufferings, and ſoothe the anguiſh of wounds which can never be healed.

For the common misfortunes of life, *hope* is a ſovereign remedy. But what remedy can be applied to evils, which involve even the loſs of hope itſelf? and what can thoſe have to hope, who are ſeparated

and

and cut off from ſociety, and for ever excluded from all ſhare in the affairs of men? To them, honours;—diſtinctions;—praiſe;—and even property itſelf;—all thoſe objects of laudable ambition which ſo powerfully excite the activity of men in civil ſociety, and contribute ſo eſſentially to happineſs, by filling the mind with pleaſing proſpects of future enjoyments, are but empty names; or rather, they are ſubjects of never-ceaſing regret and diſcontent.

That gloom muſt indeed be dreadful, which overſpreads the mind, when *hope*, that bright luminary of the ſoul, which enlightens and cheers it, and excites and calls forth into action all its beſt faculties, has diſappeared!

There are many, it is true, who, from their indolence or extravagance, or other vicious habits, fall into poverty and diſtreſs, and become a burthen on the public, who are ſo vile and degenerate as not to feel the wretchedneſs of their ſituation. But theſe are miſerable objects, which the truly benevolent will regard with an eye of peculiar compaſſion;—they muſt be very unhappy, for they are very vicious; and nothing ſhould be omitted, that can tend to reclaim them;—but nothing will tend ſo powerfully to reform them, as kind uſage from the hands of perſons they muſt learn to love and to reſpect at the ſame time.

If I am too prölix upon this head, I am ſorry for it. It is a ſtrong conviction of the great importance of the ſubject, which carries me away, and makes me, perhaps, tireſome, where I would wiſh moſt to avoid it. The care of the Poor, however, I muſt conſider as a matter of very ſerious import-

ance. It appears to me to be one of the moſt ſacred duties impoſed upon men in a ſtate of civil ſociety;—one of thoſe duties impoſed immediately by the hand of God himſelf, and of which the neglect never goes unpuniſhed.

What I have ſaid reſpecting the neceſſary qualifications of thoſe employed in taking care of the Poor, I hope will not deter well-diſpoſed perſons, who are willing to aſſiſt in ſo uſeful an undertaking, from coming forward with propoſitions for the inſtitution of public Eſtabliſhments for that purpoſe; or from offering themſelves candidates for employments in the management of ſuch Eſtabliſhments. The qualifications pointed out, integrity, and a gentle and humane diſpoſition,—honeſty, and a good heart;—are ſuch as any one may boldly lay claim to, without fear of being taxed with vanity or oſtentation.—And if individuals in private ſtations, on any occaſion are called upon to lay aſide their baſhfulneſs and modeſt diffidence, and come forward into public view, it muſt ſurely be, when by their exertions they can eſſentially contribute to promote meaſures which are calculated to increaſe the happineſs and proſperity of ſociety.

It is a vulgar ſaying, that, *what is everybody's buſineſs, is nobody's buſineſs;* and it is very certain that many ſchemes, evidently intended for the public good, have been neglected, merely becauſe nobody could be prevailed on to ſtand forward and be the firſt to adopt them. This doubtleſs has been the caſe in regard to many judicious and well-arranged propoſals for providing for the Poor; and will

will probably be ſo again. I ſhall endeavour, however, to ſhow, that though in undertakings in which the general welfare of ſociety is concerned, perſons of all ranks and conditions are called upon to give them their ſupport, yet, in the *introduction* of ſuch meaſures as are here recommended,—a ſcheme of providing for the Poor,—there are many who, by their rank and peculiar ſituations, are clearly pointed out as the moſt proper to take up the buſineſs at its commencement, and bring it forward to maturity; as well as to take an active part in the direction and management of ſuch an inſtitution after it has been eſtabliſhed: and it appears to me, that the nature and the end of the undertaking evidently point out the perſons who are more particularly called upon to ſet an example on ſuch an occaſion.

If the care of the Poor be an object of great national importance,—if it be inſeparably connected with the peace and tranquillity of ſociety, and with the glory and proſperity of the ſtate;—if the advantages which individuals ſhare in the public welfare are in proportion to the capital they have at ſtake in this great national fund—that is to ſay, in proportion to their rank, property, and connexions, or general influence;—as it is juſt that every one ſhould contribute in proportion to the advantages he receives; it is evident *who* ought to be the firſt to come forward upon ſuch an occaſion.

But it is not merely on account of the ſuperior intereſt they have in the public welfare, that perſons of high rank and great property, and ſuch as occupy

occupy places of importance in the government, are bound to ſupport meaſures calculated to relieve the diſtreſſes of the Poor;—there is ſtill another circumſtance which renders it indiſpenſably neceſſary that they ſhould take an active part in ſuch meaſures, and that is, the influence which their example muſt have upon others.

It is impoſſible to prevent the bulk of mankind from being ſwayed by the example of thoſe to whom they are taught to look up as their ſuperiors; it behoves, therefore, all who enjoy ſuch high privileges, to employ all the influence which their rank and fortune give them, to promote the public good. And this may juſtly be conſidered as a duty of a peculiar kind;—a *perſonal* ſervice attached to the ſtation they hold in ſociety, and which cannot be commuted.

But if the obligations which perſons of rank and property are under, to ſupport meaſures deſigned for the relief of the Poor, are ſo binding, how much more ſo muſt they be upon thoſe who have taken upon themſelves the ſacred office of public teachers of virtue and morality;—the Miniſters of a moſt holy religion;—a religion whoſe firſt precepts inculcate charity and univerſal benevolence, and whoſe great object is, unqueſtionably, the peace, order, and happineſs of ſociety.

If there be any whoſe peculiar province it is to ſeek for objects in diſtreſs and want, and adminiſter to them relief;—if there be any who are bound by the indiſpenſable duties of their profeſſion to encourage by every means in their power, and more eſpecially

eſpecially by *example*, the general practice of charity; it is, doubtleſs, the Miniſters of the goſpel. And ſuch is their influence in ſociety, ariſing from the nature of their office, that their example is a matter of *very ſerious importance.*

Little perſuaſion, I ſhould hope, would be neceſſary to induce the clergy, in any country, to give their cordial and active aſſiſtance in relieving the diſtreſſes of the Poor, and providing for their comfort and happineſs, by introducing order and uſeful induſtry among them.

Another claſs of men, who from the ſtation they hold in ſociety, and their knowledge of the laws of the country, may be highly uſeful in carrying into effect ſuch an undertaking, are the civil magiſtrates; and, however a committee for the government and direction of an Eſtabliſhment for the Poor may in other reſpects be compoſed, I am clearly of opinion, that the *Chief Magiſtrate* of the town, or city, where ſuch an Eſtabliſhment is formed, ought always to be one of its members. The *Clergyman* of the place who is higheſt in rank or dignity ought, likewiſe, to be another; and if he be a Biſhop, or an Archbiſhop, his aſſiſtance is ſo much the more indiſpenſable.

But as perſons who hold offices of great truſt and importance in the church, as well as under the civil government, may be ſo much engaged in the duties of their ſtations, as not to have ſufficient leiſure to attend to other matters; it may be neceſſary, when ſuch diſtinguiſhed perſons lend their aſſiſtance in the management of an Eſtabliſhment for the

the relief of the Poor, that each of them be permitted to bring with them a perſon of his own choice into the committee, to aſſiſt him in the buſineſs. The Biſhop, for inſtance, may bring his chaplain;—the Magiſtrate, his clerk;—the Nobleman, or private gentleman, his ſon, or friend, &c. But in ſmall towns, of two or three pariſhes, and particularly in country-towns, and villages, which do not conſiſt of more than one or two pariſhes, as the details in the management of the affairs of the Poor in ſuch communities cannot be extenſive, the members of the committee may manage the buſineſs without aſſiſtants. And indeed in all caſes, even in great cities, when a general Eſtabliſhment for the Poor is formed upon a good plan, the details of the executive and more laborious parts of the management of it will be ſo divided among the commiſſaries of the diſtricts, that the members of the ſupreme committee will have little more to do than juſt to hold the reins, and direct the movement of the machine. Care muſt however be taken to preſerve the moſt perfect uniformity in the motions of all its parts, otherwiſe confuſion muſt enſue; hence the neceſſity of directing the whole from one center.

As the inſpection of the Poor;—the care of them when they are ſick;—the diſtribution of the ſums granted in alms for their ſupport;—the furniſhing them with clothes;—and the collection of the voluntary ſubſcriptions of the inhabitants,—will be performed by the commiſſaries of the diſtricts, and their aſſiſtants;—and as all the details relative

to

to giving employment to the Poor, and feeding them, may be managed by particular ſubordinate committees, appointed for thoſe purpoſes, the current buſineſs of the ſupreme committee will amount to little more than the exerciſe of a *general ſuperintendance.*

This committee, it is true, muſt determine upon all demands from the Poor who apply for aſſiſtance; but as every ſuch demand will be accompanied with the moſt particular account of the circumſtances of the petitioner, and the nature and amount of the aſſiſtance neceſſary to his relief, certified by the commiſſary of the diſtrict in which the petitioner reſides,—and alſo by the parochial committee, where ſuch are eſtabliſhed,—the matter will be ſo prepared and digeſted, that the members of the ſupreme committee will have very little trouble to decide on the merits of the caſe, and the aſſiſtance to be granted.

This aſſiſtance will conſiſt—in a certain ſum to be given *weekly* in alms to the petitioner, by the commiſſary of the diſtrict, out of the funds of the Inſtitution;—in an allowance of bread only;—in a preſent of certain articles of clothing, which will be ſpecified;—or, perhaps, merely in an order for being furniſhed with food, clothing, or fuel, from the public kitchens or magazines of the Eſtabliſhment, *at the prime coſt* of thoſe articles, *as an aſſiſtance* to the petitioner, and to prevent the *neceſſity of his becoming a burthen on the Public.*

The

The manner laſt mentioned of aſſiſting the Poor,—that of furniſhing them with the neceſſaries of life at lower prices than thoſe at which they are ſold in the public markets, is a matter of ſuch importance, that I ſhall take occaſion to treat of it more fully hereafter.

With reſpect to the petitions preſented to the committee;—whatever be the aſſiſtance demanded, the petition received ought to be accompanied by a duplicate; to the end that, the deciſion of the committee being entered upon the duplicate, as well as upon the original, and the duplicate ſent back to the commiſſary of the diſtrict, the buſineſs may be finiſhed with the leaſt trouble poſſible; and even without the neceſſity of any more formal order relative to the matter being given by the committee.

I have already mentioned the great utility of *printed forms*, for petitions, returns, &c. in carrying on the buſineſs of an Eſtabliſhment for the Poor, and I would again moſt earneſtly recommend the general uſe of them. Thoſe who have not had experience in ſuch matters, can have no idea how much they contribute to preſerve order, and facilitate and expedite buſineſs. To the general introduction of them in the management of the affairs of the Inſtitution for the Poor at Munich, I attribute, more than to any thing elſe, the perfect order which has continued to reign throughout every part of that extenſive Eſtabliſhment, from its firſt exiſtence to the preſent moment.

In carrying on the buſineſs of that Eſtabliſhment, printed forms or blanks are uſed, not only for

for petitions;—returns;—liſts of the Poor;—deſcriptions of the Poor;—liſts of the inhabitants;—liſts of ſubſcribers to the ſupport of the Poor;—orders upon the banker or treaſurer of the Inſtitution;—but alſo for the reports of the monthly collections made by the commiſſaries of diſtricts;—the accounts ſent in by the commiſſaries, of the extraordinary expences incurred in affording aſſiſtance to thoſe who ſtand in need of immediate relief;—the banker's receipts;—and even the books in which are kept the accounts of the receipts and expenditures of the Eſtabliſhment.

In regard to the proper forms for theſe blanks; as they muſt depend, in a great meaſure, upon local circumſtances, no general directions can be given, other than, in all caſes, the ſhorteſt forms that can be drawn up, conſiſtent with perſpicuity, are recommended; and that the ſubject-matter of each particular or ſingle return, may be ſo diſpoſed as to be eaſily transferred to ſuch general tables, or general accounts, as the nature of the return and other circumſtances may require. Care ſhould likewiſe be taken to make them of ſuch a form, *ſhape*, and dimenſion, that they may be regularly folded up, and docketed, in order to their being preſerved among the public records of the Inſtitution.

CHAP. IV.

Of the Neceſſity of effectual Meaſures for introducing a Spirit of Induſtry among the Poor in forming an Eſtabliſhment for their Relief and Support.—Of the Means which may be uſed for that Purpoſe; and for ſetting on foot a Scheme for forming an Eſtabliſhment for feeding the Poor.

AN object of the very firſt importance in forming an Eſtabliſhment for the relief and ſupport of the Poor, is to take effectual meaſures for introducing a ſpirit of induſtry among them; for it is moſt certain, that *all ſums of money, or other aſſiſtance, given to the Poor in alms, which do not tend to make them induſtrious, never can fail to have a contrary tendency, and to operate as an encouragement to idleneſs and immorality.*

And as the merit of an action is to be determined by the good it produces, the charity of a nation ought not to be eſtimated by the millions which are paid in Poor's taxes, but by *the pains which are taken* to ſee that the ſums raiſed are properly applied.

As the providing uſeful employment for the Poor, and rendering them induſtrious, is, and ever has been, a great *deſideratum* in political economy,

nomy, it may be proper to enlarge a little here, upon that intereſting ſubject.

The great miſtake committed in moſt of the attempts which have been made to introduce a ſpirit of induſtry, where habits of idleneſs have prevailed, has been the too frequent and improper uſe of coercive meaſures, by which the perſons to be reclaimed have commonly been offended and thoroughly diſguſted at the very out-ſet.—Force will not do it.—*Addreſs*, not force, muſt be uſed on thoſe occaſions.

The children in the houſe of induſtry at Munich, who, being placed upon elevated ſeats round the halls where other children worked, were made to be idle ſpectators of that amuſing ſcene, cried moſt bitterly when their requeſt to be permitted to deſcend from their places, and mix in that buſy crowd, was refuſed;—but they would, moſt probably, have cried ſtill more, had they been taken abruptly from their play and *forced* to work.

"Men are but children of a larger growth;"—and thoſe who undertake to direct them, ought ever to bear in mind that important truth.

That *impatience of control*, and jealouſy and obſtinate perſeverance in maintaining the rights of perſonal liberty and independence, which ſo ſtrongly mark the human character in all the ſtages and ſituations of life, muſt be managed with great caution and addreſs, by thoſe who are deſirous of doing good;—or, indeed, of doing any thing effectually with mankind.

It has often been ſaid, that the Poor are vicious and profligate, and that *therefore* nothing but force

will anſwer to make them obedient, and keep them in order;—but, I ſhould ſay, that *becauſe* the Poor are vicious and profligate, it is ſo much the more neceſſary to avoid the appearance of force in the management of them, to prevent their becoming rebellious and incorrigible.

Thoſe who are employed to take up and tame the wild horſes belonging to the Elector Palatine, which are bred in the foreſt near Duſſeldorff, never uſe force in reclaiming that noble animal, and making him docile and obedient. They begin with making a great circuit, in order to approach him; and rather decoy than force him into the ſituation in which they wiſh to bring him, and ever afterwards treat him with the greateſt kindneſs; it having been found by experience, that ill-uſage ſeldom fails to make him "a man-hater," untameable, and incorrigibly vicious.—It may, perhaps, be thought fanciful and trifling, but the fact really is, that an attention to the means uſed by theſe people to gain the confidence of thoſe animals, and teach them to like their keepers, their ſtables and their mangers, ſuggeſted to me many ideas which I afterwards put in practice with great ſucceſs, in reclaiming thoſe abandoned and ferocious animals in human ſhape, which I undertook to tame, and render gentle and docile.

It is however neceſſary in every attempt to introduce a ſpirit of order and induſtry among the idle and profligate, not merely to avoid all harſh and offenſive treatment, which, as has already been obſerved, could only ſerve to irritate them, and ren-

der

der them ſtill more vicious and obſtinate, but it is alſo indiſpenſably neceſſary to do every thing that can be deviſed to encourage and reward every ſymptom of reformation.

It will likewiſe be neceſſary ſometimes to puniſh the obſtinate; but recourſe ſhould never be had to puniſhments till *good uſage* has firſt been fairly tried and found to be ineffectual. The delinquent muſt be made to ſee that he has deſerved the puniſhment, and when it is inflicted, care ſhould be taken to make him feel it. But in order that the puniſhment may have the effects intended, and not ſerve to irritate the perſon puniſhed, and excite perſonal hatred and revenge, inſtead of diſpoſing the mind to ſerious reflection, it muſt be adminiſtered in the moſt ſolemn and moſt *diſpaſſionate* manner; and it muſt be continued no longer than till the *firſt dawn* of reformation appears.

How much prudence and caution are neceſſary in diſpenſing rewards and puniſhments;—and yet—how little attention is in general paid to thoſe important tranſactions!

Rewards and *Puniſhments* are the only means by which mankind can be controlled and directed; and yet, how often do we ſee them diſpenſed in the moſt careleſs—moſt imprudent—and moſt improper manner!—how often are they confounded!—how often miſapplied!—and how often do we ſee them made the inſtruments of gratifying the moſt ſordid private paſſions!

To the improper uſe of them may be attributed all the diſorders of civil ſociety.—To the improper

or careleſs uſe of them may, moſt unqueſtionably, be attributed the prevalence of poverty, miſery, and mendicity in moſt countries, and particularly in Great Britain, where the healthfulneſs and mildneſs of the climate—the fertility of the ſoil—the abundance of fuel—the numerous and flouriſhing manufactures—the extenſive commerce—and the millions of acres of waſte lands which ſtill remain to be cultivated, furniſh the means of giving uſeful employment to all its inhabitants, and even to a much more numerous population.

But if inſtead of encouraging the laudable exertions of uſeful induſtry, and aſſiſting and relieving the unfortunate and the infirm—(the only real objects of charity,)—the means deſigned for thoſe purpoſes are ſo miſapplied as to operate as rewards to idleneſs and immorality, the greater the ſums are which are levied on the rich for the relief of the poor, the more numerous will that claſs become, and the greater will be their profligacy, their inſolence, and their ſhameleſs and clamorous importunity.

There is, it cannot be denied, in man, a natural propenſity to ſloth and indolence; and, though habits of induſtry,—like all habits,—may render thoſe exertions eaſy and pleaſant which at firſt are painful and irkſome, yet no perſon, in any ſituation, ever choſe labour merely for its own ſake. It is always the apprehenſion of ſome greater evil,—or the hope of ſome enjoyment, by which mankind are compelled or allured, when they take to induſtrious purſuits.

In

In the rude ſtate of ſavage nature the wants of men are few, and theſe may all be eaſily ſupplied without the commiſſion of any crime; conſequently induſtry, under ſuch circumſtances, is not neceſſary, nor can indolence be juſtly conſidered as a vice; but in a ſtate of civil ſociety, where population is great, and the means of ſubſiſtence not to be had without labour, or without defrauding others of the fruits of their induſtry, idleneſs becomes a crime of the moſt fatal tendency, and conſequently of the moſt heinous nature; and every means ſhould be uſed to diſcountenance, puniſh, and prevent it.

And we ſee that Providence, ever attentive to provide remedies for the diſorders which the progreſs of ſociety occaſions in the world, has provided for idleneſs—as ſoon as the condition of ſociety renders it a vice, but not before—a puniſhment every way ſuited to its nature, and calculated to prevent its prevalency and pernicious conſequences: —This is *want*,—and a moſt efficacious remedy it is for the evil,—when the *wiſdom of man* does not interfere to counteract it, and prevent its ſalutary effects.

But reſerving the farther inveſtigation of this part of my ſubject—that reſpecting the means to be uſed for encouraging induſtry—to ſome future opportunity, I ſhall now endeavour to ſhow, in a few words, how, under the moſt unfavourable circumſtances, an arrangement for putting an end to mendicity, and introducing a ſpirit of induſtry among the Poor, might be introduced and carried into execution.

If I am obliged to take a great circuit, in order to arrive at my object, it muſt be remembered, that where a vaſt weight is to be raiſed by human means, a variety of machinery muſt neceſſarily be provided; and that it is only by bringing all the different powers employed to act together to the ſame end, that the purpoſe in view can be attained. It will likewiſe be remembered, that as no mechanical power can be made to act without a force be applied to it ſufficient to overcome the reſiſtance, not only of the *vis inertiæ*, but alſo of friction, ſo no moral agent can be brought to act to any given end without ſufficient motives; that is to ſay, without ſuch motives as *the perſon who is to act* may deem ſufficient, not only to decide his opinion, but alſo to *overcome his indolence*.

The object propoſed,—the relief of the Poor, and the providing for their future comfort and happineſs, by introducing among them a ſpirit of order and induſtry, is ſuch as cannot fail to meet with the approbation of every well-diſpoſed perſon. —But I will ſuppoſe, that a bare conviction of the *utility* of the meaſure is not ſufficient alone to overcome the indolence of the Public, and induce them to engage *actively* in the undertaking;—yet as people are at all times, and in all ſituations, ready enough to do what they *feel* to be their intereſt, if, in bringing forward a ſcheme of public utility, the proper means be uſed to render it ſo intereſting as to awaken the *curioſity*, and fix the attention of the Public, no doubts can be entertained of the poſſibility of carrying it into effect.

In

In arranging ſuch a plan, and laying it before the Public, no ſmall degree of knowledge of mankind, and particularly of the various means of acting on them, which are peculiarly adapted to the different ſtages of civilization, or rather of the political refinement and corruption of ſociety, would, in moſt caſes, be indiſpenſably neceſſary; but with that knowledge, and a good ſhare of zeal, addreſs, prudence, and perſeverance, there are few ſchemes, in which an honeſt man would wiſh to be concerned, that might not be carried into execution in any country.

In ſuch a city as London, where there is great wealth;—public ſpirit;—enterprize;—and zeal for improvement; little more, I flatter myſelf, would be neceſſary to engage all ranks to unite in carrying into effect ſuch a ſcheme, than to ſhow its public utility; and, above all, to prove that there *is no job* at the bottom of it.

It would, however, be adviſeable, in ſubmitting to the Public, Propoſals for forming ſuch an Eſtabliſhment, to ſhow that thoſe who are invited to aſſiſt in carrying it into execution, would not only derive from it much pleaſure and ſatisfaction, but alſo many real advantages; for too much pains can never be taken to intereſt the Public individually, and directly, in the ſucceſs of meaſures tending to promote the general good of ſociety.

The following Propoſals, which I will ſuppoſe to be made by ſome perſon of known and reſpectable character, who has courage enough to engage

in ſo arduous an undertaking, will ſhow my ideas upon this ſubject in the cleareſt manner.—Whether they are well founded, muſt be left to the reader to determine.—As to myſelf, I am ſo much perſuaded that the ſcheme here propoſed, by way of example, and merely for illuſtration, might be executed, that, had I time for the undertaking, (which I have not,) I ſhould not heſitate to engage in it.

"PROPOSALS

"FOR FORMING BY PRIVATE SUBSCRIPTION,

AN

"ESTABLISHMENT

"For feeding the POOR, and giving them uſeful "Employment;

"And alſo for furniſhing Food at a cheap Rate to others who "may ſtand in need of ſuch Aſſiſtance. Connected with an "INSTITUTION for introducing, and bringing forward into "general Uſe, new Inventions and Improvements, particu- "larly ſuch as relate to the Management of *Heat* and the "ſaving of *Fuel*; and to various other mechanical Con- "trivances by which *Domeſtic Comfort* and *Economy* may be "promoted.

"Submitted to the Public,

"By A. B.

"The Author of theſe Propoſals declares "ſolemnly, in the face of the whole world, that "he has no intereſted view whatever in making "theſe

" theſe Propoſals; but is actuated merely and " ſimply by a deſire to do good, and promote the " happineſs and proſperity of ſociety, and the " honour and reputation of his country.—That he " never will demand, accept, or receive any pay or " other recompence or reward of any kind what- " ever from any perſon or perſons, for his ſervices " or trouble, in carrying into execution the pro- " poſed ſcheme, or any part thereof, or for any " thing he may do or perform in future relating to " it, or to any of its details or concerns.

" And, moreover, that he never will avail him- " ſelf of any opportunities that may offer in the " execution of the plan propoſed, for deriving " profit, emolument, or advantage of any kind, " either for himſelf, his friends, or connections;— " but that, on the contrary, he will take upon " himſelf to be perſonally reſponſible to the Public, " and more immediately to the Subſcribers to this " Undertaking, that *no perſon* ſhall *find means* to " make a job of the propoſed Eſtabliſhment, or of " any of the details of its execution, or of its " management, as long as the Author of theſe " Propoſals remains charged with its direction.

" With reſpect to the particular objects and " extent of the propoſed Eſtabliſhment, theſe may " be ſeen by the account which is given of them " at the head of theſe Propoſals; and as to their " utility, there can be no doubts. They certainly " muſt tend very powerfully to promote the com- " fort, happineſs, and proſperity of ſociety, and " will do honour to the nation, as well as to thoſe

" individuals

" individuals who may contribute to carry them " into execution.

" With regard to the poſſibility of carrying into " effect the propoſed ſcheme:—the facility with " which this may be done, will be evident when " the method of doing it, which will now be " pointed out, is duly conſidered.

" As ſoon as a ſum ſhall be ſubſcribed ſufficient " for the purpoſes intended, the Author of theſe " Propoſals will, by letters, requeſt a meeting of " the *twenty-five* perſons who ſhall ſtand higheſt on " the liſt of ſubſcribers, for the purpoſe of examin- " ing the ſubſcription-liſts, and of appointing, by " ballot, a committee, compoſed of five perſons, " ſkilled in the details of building, and in ac- " counts, to collect the ſubſcriptions, and to " ſuperintend the execution of the plan.—This " committee, which will be choſen from among " the ſubſcribers at large, will be authorized and " directed, to examine all the works that will be " neceſſary in forming the Eſtabliſhment, and ſee " that they are properly performed, and at rea- " ſonable prices;—to examine and approve of all " contracts for work, or for materials;—to exa- " mine and check all accounts of expenditures of " every kind, in the execution of the plan;—and " to give orders for all payments.

" The general arrangement of the Eſtabliſh- " ment, and of all its details, will be left to the " Author of theſe Propoſals; who will be reſpon- " ſible for their ſucceſs.—He engages, however, " in the proſecution of this buſineſs, to adhere

" faithfully

" faithfully to the plan here propoſed, and never to " depart from it on any pretence whatever.

" With regard to the choice of a ſpot for erect- " ing this Eſtabliſhment, a place will be choſen " within the limits of the Town, and in as conve- " nient and central a ſituation as poſſible, where " ground enough for the purpoſe is to be had " at a reaſonable price *.—The agreement for " the purchaſe, or hire of this ground, and of " the buildings, if there be any on it, will, like " all other bargains and contracts, be ſubmitted " to the committee for their approbation and " ratification.

" The order in which it is propoſed to carry " into execution the different parts of the ſcheme " is as follows:—Firſt, to eſtabliſh a public kitchen " for furniſhing Food to ſuch poor perſons as ſhall " be recommended by the ſubſcribers for ſuch " aſſiſtance.

" This Food will be of four different ſorts, " namely, No. I. A nouriſhing ſoup compoſed of " barley—peaſe—potatoes, and bread; ſeaſoned " with ſalt, pepper, and fine herbs.—The portion " of this ſoup, one pint and a quarter, weighing " about twenty ounces, will coſt *one penny*.

" No. II. A rich peaſe-ſoup, well ſeaſoned;— " with fried bread;—the portion (twenty ounces) " at *two pence*.

" No. III. A rich and nouriſhing ſoup, of barley, " peaſe, and potatoes, properly ſeaſoned;—with

* " It will be beſt, if it be poſſible, to mention and deſcribe the " place, in the Propoſals."

" fried

" fried bread; and two ounces of boiled bacon,
" cut fine and put into it.—The portion (20
" ounces) at *four pence.*

" No. IV. A good ſoup; with boiled meat and
" potatoes or cabbages, or other vegetables; with
" ¼lb. of good rye bread, the portion at *ſix pence.*

" Adjoining to the kitchen, four ſpacious eat-
" ing-rooms will be fitted up, in each of which one
" only of the four different kinds of Food prepared
" in the kitchen will be ſerved.

" Near the eating-rooms, other rooms will be
" neatly fitted up, and kept conſtantly clean, and
" well warmed; and well lighted in the evening;
" in which the Poor who frequent the Eſtabliſh-
" ment will be permitted to remain during the
" day, and till a certain hour at night.—They will
" be allowed and even *encouraged* to bring their
" work with them to theſe rooms; and by degrees
" they will be furniſhed with utenſils, and raw
" materials for working for their own emolument,
" by the Eſtabliſhment. Praiſes and rewards will
" be beſtowed on thoſe who moſt diſtinguiſh them-
" ſelves by their induſtry, and by their peaceable
" and orderly behaviour.

" In fitting up the kitchen, care will be taken
" to introduce every uſeful invention and im-
" provement, by which fuel may be ſaved, and
" the various proceſſes of cookery facilitated, and
" rendered leſs expenſive; and the whole mecha-
" nical arrangement will be made as complete and
" perfect as poſſible, in order that it may ſerve as
" a model for imitation; and care will likewiſe be

" taken

" taken in fitting up the dining-halls, and other " rooms belonging to the Eſtabliſhment, to intro- " duce the moſt approved fire-places,—ſtoves,— " flews, and other mechanical contrivances for " heating rooms and paſſages;—as alſo in lighting " up the houſe to make uſe of a variety of the beſt, " moſt economical, and moſt beautiful lamps; and " in ſhort, to collect together ſuch an aſſemblage of " uſeful and elegant inventions, in every part of the " Eſtabliſhment, as to render it not only an object " of public curioſity, but alſo of the moſt eſſential " and extenſive utility.

" And although it will not be poſſible to make " the Eſtabliſhment ſufficiently extenſive to accom- " modate all the Poor of ſo large a city, yet it " may eaſily be made large enough to afford a " comfortable aſylum to a great number of diſ- " treſſed objects; and the intereſting and affecting " ſcene it will afford to ſpectators, can hardly fail " to attract the curioſity of the Public; and there " is great reaſon to hope that the ſucceſs of the " experiment, and the evident tendency of the " meaſures adopted to promote the comfort, hap- " pineſs, and proſperity of ſociety, will induce many " to exert themſelves in forming ſimilar Eſtabliſh- " ments in other places.—It is even probable that " the ſucceſs which will attend this firſt eſſay, (for " ſucceſsful it muſt, and will be, as care will be " taken to limit its extent to the means furniſhed " for carrying it into execution,) will encourage " others, who do not put down their names upon " the liſts of the ſubſcribers at firſt, to follow

" with

" with ſubſcriptions for the purpoſe of augmenting " the Eſtabliſhment, and rendering it more ex- " tenſively uſeful.

" Should this be the caſe, it is poſſible that in " a ſhort time ſubordinate public kitchens, with " rooms adjoining them for the accommodation of " the induſtrious Poor, may be eſtabliſhed in all " the pariſhes;—and when this is done, only one " ſhort ſtep more will be neceſſary in order to " complete the deſign, and introduce a perfect " ſyſtem in the management of the Poor. Poor " rates may then be entirely aboliſhed, and *volun-* " *tary ſubſcriptions*, which certainly need never " amount to one half what the Poor rates now are, " may be ſubſtituted in the room of them, and one " general eſtabliſhment may be formed for the " relief and ſupport of the Poor in this capital.

" It will however be remembered that it is by " no means the intention of the Author of theſe " Propoſals that thoſe who contribute to the object " immediately in view,—the forming *a model* for an " Eſtabliſhment for feeding and giving employ- " ment to the Poor,—ſhould be troubled with any " future ſolicitations on that ſcore; very far from " it, meaſures will be ſo taken, by limiting the " extent of the undertaking to the amount of the " ſums ſubſcribed, and by arranging matters ſo " that the Eſtabliſhment, once formed, ſhall be " able to ſupport itſelf, that no farther aſſiſtance " from the ſubſcribers will be neceſſary.—If any " of them ſhould, of their accord, follow up their " ſubſcriptions by other donations, theſe addi-

" tional

" tional ſums will be thankfully received, and faith-
" fully applied, to the general or particular pur-
" poſes for which they may be deſigned; but the
" ſubſcribers may depend upon never being trou-
" bled with any future *ſolicitations* on any pre-
" tence whatever, on account of the preſent un-
" dertaking.

" A ſecondary object in forming this Eſtabliſh-
" ment, and which will be attended to as ſoon as
" the meaſures for feeding the Poor, and giving
" them employment, are carried into execution,
" is the forming of a grand repoſitory of all kinds
" of *uſeful mechanical inventions*, and particularly
" of ſuch as relate to the furniſhing of houſes, and
" are calculated to promote domeſtic comfort and
" economy.

" Such a repoſitory will not only be highly in-
" tereſting, conſidered as an object of public
" curioſity, but it will be really uſeful, and will
" doubtleſs contribute very powerfully to the in-
" troduction of many eſſential improvements.

" To render this part of the Eſtabliſhment ſtill
" more complete, rooms will be ſet apart for re-
" ceiving, and expoſing to public view, all ſuch
" new and uſeful inventions as ſhall, from time to
" time, be made, in this, or in any other country,
" and ſent to the inſtitution; and a written ac-
" count, containing the name of the inventor,—
" the place where the article may be bought,—and
" the price of it, will be attached to each article,
" for the information of thoſe who may be de-
" ſirous of knowing any of theſe particulars.

"If the amount of the ſubſcriptions ſhould be "ſufficient to defray the additional expence which "ſuch an arrangement would require, models will "be prepared, upon a reduced ſcale, for ſhowing "the improvements which may be made in the "conſtruction of the coppers, or boilers, uſed by "brewers and diſtillers, as alſo of their fire-places; "with a view both to the economy of fuel, and to "convenience.

"Complete kitchens will likewiſe be con-"ſtructed, of the full ſize, with all their utenſils, "as models for private families.—And that theſe "kitchens may not be uſeleſs, eating rooms may "be fitted up adjoining to them, and cooks en-"gaged to furniſh to gentlemen, ſubſcribers, or "others, to whom ſubſcribers may delegate that "right, good dinners, at the prime coſt of the "victuals and the expences of cooking, which "together certainly would not exceed *one ſhilling a* "*head.*

"The public kitchen from whence the Poor will "be fed will be ſo conſtructed as to ſerve as a "model for hoſpitals, and for other great Eſtabliſh-"ments of a ſimilar nature.

"The expence of feeding the Poor will be pro-"vided for by ſelling the portions of Food deli-"vered from the public kitchen at ſuch a price, "that thoſe expences ſhall be juſt covered, and no "more:—ſo that the eſtabliſhment, when once "completed, will be made to ſupport itſelf.

"Tickets for Food (which may be conſidered "as drafts upon the public kitchen, payable at "ſight)

" ſight) will be furniſhed to all perſons who apply " for them, in as far as it ſhall be poſſible to " ſupply the demands; but care will be taken to " provide, firſt, for the Poor who frequent re- " gularly the working rooms belonging to the " Eſtabliſhment; and ſecondly, to pay attention to " the recommendations of ſubſcribers, by furniſh- " ing Food immediately, or with the leaſt poſſible " delay, to thoſe who come with ſubſcribers' " tickets.

" As ſoon as the Eſtabliſhment ſhall be com- " pleted, every ſubſcriber will be furniſhed *gratis* " with tickets for Food, to the amount of *ten per* " *cent.* of his ſubſcription; the value of the tickets " being reckoned at what the portions of Food " really coſt, which will be delivered to thoſe who " produce the tickets at the public kitchen.—At " the end of ſix months, tickets to the amount of " *ten per cent. more*, and ſo on, at the end of every " ſix ſucceeding months, tickets to the amount of " *ten per cent.* of the ſum ſubſcribed will be deli- " vered to each ſubſcriber till he ſhall actually " have received in tickets for Food, or drafts upon " the public kitchen, to the full amount of *one half* " of his original ſubſcription. And as the price " at which this Food will be charged, will be " at the moſt moderate computation, at leaſt *fifty* " *per cent.* cheaper than it would coſt any where " elſe, the ſubſcribers will in fact receive in theſe " tickets the full value of the ſums they will have " ſubſcribed; ſo that in the end, the whole advance " will be repaid, and a moſt intereſting, and moſt

" uſeful public inſtitution will be completely eſta-
" bliſhed *without any expence to anybody.* — And
" the Author of theſe Propoſals will think himſelf
" moſt amply repaid for any trouble he may have
" had in the execution of this ſcheme, by the
" heartfelt ſatisfaction he will enjoy in the reflec-
" tion of having been inſtrumental in doing eſſen-
" tial ſervice to mankind.

" It is hardly neceſſary to add, that although
" the ſubſcribers will receive in return for their
" ſubſcriptions the full value of them in tickets,
" or orders upon the public kitchen for Food,
" yet the property of the whole Eſtabliſhment,
" with all its appurtenances, will nevertheleſs re-
" main veſted ſolely and entirely in the ſubſcribers,
" and their lawful heirs; and that they will have
" power to diſpoſe of it in any way they may think
" proper, as alſo to give orders and directions for
" its future management.

(Signed)

" A. B."

" London, 1ſt January
" 1796."

Theſe Propoſals, which ſhould be printed, and diſtributed *gratis*, in great abundance, ſhould be accompanied with *ſubſcription-liſts* which ſhould be printed on fine writing-paper; and to ſave trouble to the ſubſcribers, might be of a peculiar form.—Upon the top of a half-ſheet of folio writing-paper, might be printed the following

Head

Head or Title, and the remainder of that ſide of the half-ſheet, below this Head, might be formed into different columns, thus:

"SUBSCRIPTIONS,

"For carrying into execution the ſcheme for form-
"ing an *Eſtabliſhment* for feeding the Poor
"from a *Public* KITCHEN, and giving them
"uſeful employment, &c. propoſed by A. B.
"and particularly deſcribed in the printed paper,
"dated London, 1ſt January 1796, which ac-
"companies this Subſcription Liſt.

"N. B. *No part of the money ſubſcribed will be*
"*called for, unleſs it be found that the amount of*
"*the ſubſcriptions will be quite ſufficient to carry*
"*the ſcheme propoſed into complete execution without*
"*troubling the ſubſcribers a ſecond time for further*
"*aſſiſtance.*"

Subſcribers' Names.	Places of Abode.	Sums Subſcribed.
		L. *s.* *d.*

"That

" That this liſt is authentic, and that the per-
" ſons mentioned in it have agreed to ſubſcribe
" the ſums placed againſt their names, is atteſted
" by [ ].

" *The perſon who is ſo good as to take charge of*
" *this liſt, is requeſted to authenticate it by ſigning*
" *the above certificate, and then to ſeal it up and*
" *ſend it according to the printed addreſs on the*
" *back of it.*"

The addreſs upon the back of the ſubſcription liſts, (which may be that of the author of the Propoſals, or of any other perſon he may appoint to receive theſe liſts,) ſhould be printed in ſuch a manner that, when the liſt is folded up in the form of a letter, the addreſs may be in its proper place. This will ſave trouble to thoſe who take charge of theſe liſts; and too much pains cannot be taken to give as little trouble as poſſible to perſons who are ſolicited to contribute *in money* towards carrying into execution ſchemes of public utility.

As a Public Eſtabliſhment, like that here propoſed, would be highly intereſting, even were it to be conſidered in no other light than merely as an object of curioſity, there is no doubt but it would be much frequented; and it is poſſible that this concourſe of people might be ſo great as to render it neceſſary to make ſome regulations in regard to admittance: but, whatever meaſures might be adopted with reſpect to others, *ſubſcribers* ought certainly to have free admittance at all times to every part of the Eſtabliſhment.—

They

They ſhould even have a right individually to examine all the details of its adminiſtration, and to require from thoſe employed as overſeers, or managers, any information or explanation they might want.—They ought likewiſe to be at liberty to take drawings, or to have them taken by others, (at their expence,) for themſelves or for their friends, of the kitchen, ſtoves, grates, furniture, &c. and in general of every part of the machinery belonging to the Eſtabliſhment.

In forming the Eſtabliſhment, and providing the various machinery, care ſhould be taken to employ the moſt ingenious and moſt reſpectable tradeſmen; and if the name of the maker, and the place of his abode were to be engraved or written on each article, this, no doubt, would tend to excite emulation among the artiſans, and induce them to furniſh goods of the beſt quality, and at as low a price as poſſible.—It is even poſſible, that in a great and opulent city like London, and where public ſpirit and zeal for improvement pervade all ranks of ſociety, many reſpectable tradeſmen in eaſy circumſtances might be found, who would have real pleaſure in furniſhing *gratis* ſuch of the articles wanted as are in their line of buſineſs: and the advantages which might, with proper management, be derived from this ſource, would moſt probably be very conſiderable.

With regard to the management of the Poor who might be collected together for the purpoſe of being fed and furniſhed with employment, in a Public Eſtabliſhment like that here recommended,

I cannot do better than refer my reader to the account already publiſhed (in my Firſt Eſſay) of the manner in which the Poor at Munich were treated in the Houſe of Induſtry eſtabliſhed in that city, and of the means that were uſed to render them comfortable, *happy*, and induſtrious.

As ſoon as the ſcheme here recommended ſhall be carried into execution, and meaſures effectually taken for feeding the Poor at a cheap rate, and giving them uſeful employment, no farther difficulties will then remain,—at leaſt none certainly that are inſurmountable,—to prevent the introduction of a general plan for providing for all the Poor, founded upon the principles explained and recommended in the preceding Chapters of this Eſſay.

CHAP. V.

Of the Means which may be uſed by Individuals in affluent Circumſtances for the Relief of the Poor in their Neighbourhood.

As nothing tends more powerfully to encourage idleneſs and immorality among the Poor, and conſequently to perpetuate all the evils to ſociety which ariſe from the prevalence of poverty and mendicity, than injudicious diſtributions of alms; individuals muſt be very cautious in beſtowing their private charities, and in forming ſchemes for giving aſſiſtance to the diſtreſſed; otherwiſe they will *moſt certainly* do more harm than good.—The evil tendency of giving alms indiſcriminately to beggars is univerſally acknowledged; but it is not, I believe, ſo generally known how much harm is done by what are called the *private charities* of individuals.—Far be it from me to wiſh to diſcourage private charities; I am only anxious that they ſhould be better applied.

Without taking up time in analyzing the different motives by which perſons of various character are induced to give alms to the Poor, or of ſhewing the conſequences of their injudicious or careleſs donations; which would be an unprofitable as well as a diſagreeable inveſtigation; I ſhall briefly point out what appear to me to be the moſt effectual means which individuals in affluent circumſtances can employ for the aſſiſtance of the Poor in their neighbourhood.

The moſt certain and efficacious relief that can be given to the Poor, is that which would be afforded them by forming a general Eſtabliſhment for giving them *uſeful employment*, and furniſhing them with the neceſſaries of life at a cheap rate; in ſhort, forming a Public Eſtabliſhment ſimilar in all reſpects to that already recommended, and making it as extenſive as circumſtances will permit.

An experiment might firſt be made in a ſingle village, or in a ſingle pariſh; a ſmall houſe, or two or three rooms only, might be fitted up for the reception of the Poor, and particularly of the children of the Poor; and to prevent the bad impreſſions which are ſometimes made by names which have become odious, inſtead of calling it a Workhouſe, it might be called "A School of Induſtry," or, perhaps, *Aſylum* would be a better name for it. —One of theſe rooms ſhould be fitted up as a kitchen for cooking for the Poor; and a middle aged woman of reſpectable character, and above all, *of a gentle and humane diſpoſition*, ſhould be placed at the head of this little Eſtabliſhment, and lodged in the houſe.—As ſhe ſhould ſerve at the ſame time as chief cook, and as ſteward of the inſtitution, it would be neceſſary that ſhe ſhould be able to write and keep accounts; and in caſes where the buſineſs of ſuperintending the various details of the Eſtabliſhment would be too extenſive to be performed by one perſon, one or more aſſiſtants may be given her.

In large Eſtabliſhments it might, perhaps, be beſt to place a married couple, rather advanced in life, and without children, at the head of the inſtitution;

tution; but whoever are employed in that ſituation, care ſhould be taken that they ſhould be perſons of irreproachable character, and ſuch as the Poor can have no reaſon to ſuſpect of partiality.

As nothing would tend more effectually to ruin an Eſtabliſhment of this kind, and prevent the good intended to be produced by it, than the perſonal diſlikes of the Poor to thoſe put over them, and more eſpecially ſuch diſlikes as are founded on their ſuſpicions of their partiality, the greateſt caution in the choice of theſe perſons will always be neceſſary: and in general it will be beſt not to take them from among the Poor, or at leaſt not from among thoſe of the neighbourhood, nor ſuch as have relations, acquaintances, or other connexions among them.

Another point to be attended to in the choice of a perſon to be placed at the head of ſuch an Eſtabliſhment, (and it is a point of more importance than can well be imagined by thoſe who have not conſidered the matter with ſome attention,)—is the looks, or *external appearance* of the perſon deſtined for this employment.

All thoſe who have ſtudied human nature, or have taken notice of what paſſes in themſelves when they approach for the firſt time a perſon who has any thing very ſtrongly marked in his countenance, will feel how very important it is that a perſon placed at the head of an aſylum for the reception of the Poor and the unfortunate ſhould have an open, pleaſing countenance; ſuch as inſpires confidence, and conciliates affection and eſteem; and this precaution is not the leſs deſerving of the attention

tion of the benevolent, becauſe the poor people, who are the objects of it, are themſelves not aware of its operation.

The truly benevolent will find as much ſatisfaction in *preventing* the ſufferings of their fellow-creatures as in relieving their diſtreſſes; and perhaps the moſt refined delight, the moſt godlike pleaſure, of which a human being is capable, is doing good to thoſe who are ignorant of the care and ſolicitude that are employed in promoting their happineſs.

Thoſe who are in diſtreſs are apt to be fearful and apprehenſive, and nothing would be ſo likely to intimidate and diſcourage them as the forbidding aſpect of a ſtern and auſtere countenance in the perſon they were taught to look up to for aſſiſtance and protection.

The external appearance of thoſe who are deſtined to command others is always a matter of real importance, but it is peculiarly ſo when thoſe to be commanded and directed are objects of pity and commiſeration.

Where there are ſeveral gentlemen who live in the neighbourhood of the ſame town or village where an Eſtabliſhment, or *Aſylum*, (as I would wiſh it might called,) for the Poor is to be formed, they ſhould all unite to form *one Eſtabliſhment*, inſtead of each forming a ſeparate one; and it will likewiſe be very uſeful in all caſes to invite all ranks of people reſident within the limits of the diſtrict in which an Eſtabliſhment is formed, except thoſe who are actually in need of aſſiſtance themſelves, to contribute to carry into execution

ſuch

ſuch a public undertaking; for though the ſums the more indigent and neceſſitous of the inhabitants may be able to ſpare may be trifling, yet their being invited to take part in ſo laudable an undertaking will be flattering to them; and the ſums they contribute, however ſmall they may be, will give them a ſort of property in the Eſtabliſhment, and will effectually engage their *good wiſhes* at leaſt, (which are of more importance in ſuch caſes than is generally imagined,) for its ſucceſs.

How far the relief which the Poor would receive from the execution of a ſcheme like that here propoſed, ought to preclude them from a participation of other public charities, (in the diſtribution of the ſums levied upon the inhabitants in Poor's taxes, for inſtance, where ſuch exiſt,) muſt be determined in each particular caſe according to the exiſting circumſtances. It will, however, always be indiſpenſably neceſſary where the ſame poor perſon receives charitable aſſiſtance from two or more ſeparate inſtitutions, or from two or more private individuals, at the ſame time, for each to know exactly the amount of what the others give, otherwiſe too much or too little may be given, and both theſe extremes are equally dangerous; they both tend to diſcourage INDUSTRY, *the only ſource of effectual relief to the diſtreſſes and miſery of the Poor.*—And hence may again be ſeen the great importance of what I have ſo often inſiſted on, the rendering of meaſures for the relief of the Poor as general as poſſible.

To illuſtrate in the cleareſt manner, and in as few words as poſſible, the plan I would recommend

mend for forming an Eſtabliſhment for the Poor on a ſmall ſcale—ſuch as any individual, even of moderate property, might eaſily execute; I will ſuppoſe that a gentleman, reſident in the country upon his own eſtate, has come to a reſolution to form ſuch an Eſtabliſhment in a village near his houſe, and will endeavour briefly to point out the various ſteps he would probably find it neceſſary to take in the execution of this benevolent and moſt uſeful undertaking.

He would begin by calling together at his houſe the clergyman of the pariſh, overſeers of the Poor, and other pariſh officers, to acquaint them with his intentions, and aſk their aſſiſtance and friendly co-operation in the proſecution of the plan; the details of which he would communicate to them, as far as he ſhould think it prudent and neceſſary at the firſt outſet to entruſt them indiſcriminately with that information.—The characters of the perſons, and the private intereſt they might have to promote or oppoſe the meaſures intended to be purſued, would decide upon the degree of confidence which ought to be given them.

At this meeting, meaſures ſhould be taken for forming the moſt complete and moſt accurate liſts of all the Poor reſident within the limits propoſed to be given to the Eſtabliſhment, with a detailed account of every circumſtance relative to their ſituations, and their wants.—Much time and trouble will be ſaved in making out theſe liſts, by uſing printed forms or blanks ſimilar to thoſe made uſe of at Munich; and theſe printed forms will likewiſe contribute very eſſentially to preſerve order and to facilitate buſineſs, in the management of a private as well as of a public

public charity;—as alſo to prevent the effects of miſrepreſentation and partiality on the part of thoſe who muſt neceſſarily be employed in theſe details.

Convenient forms or models for theſe blanks will be given in the Appendix to this volume.

At this meeting, meaſures may be taken for numbering all the houſes in the village or diſtrict, and for ſetting on foot private ſubſcriptions among the inhabitants for carrying the propoſed ſcheme into execution.

Thoſe who are invited to ſubſcribe ſhould be made acquainted, by a printed addreſs accompanying the ſubſcription-liſts, with the nature, extent, and tendency of the meaſures adopted; and ſhould be aſſured that, as ſoon as the undertaking ſhall be completed, the Poor will not only be relieved, and their ſituation made more comfortable, but mendicity will be effectually prevented, and at the ſame time the Poor's rates, or the expence to the public for the ſupport of the Poor, very conſiderably leſſened.

Theſe aſſurances, which will be the ſtrongeſt inducements that can be uſed to prevail on the inhabitants of all deſcriptions to enter warmly into the ſcheme, and aſſiſt with alacrity in carrying it into execution, ſhould be expreſſed in the ſtrongeſt terms; and all perſons of every denomination, young and old, and of both ſexes, (paupers only excepted,) ſhould be invited to put down their names in the ſubſcription-liſts, and this even *however ſmall the ſums may be which they are able to contribute.*—Although the ſums which day-labourers, ſervants, and others in indigent circumſtances may be able to contribute, may be very trifling,

trifling, yet there is one important reaſon why they ought always to be engaged to put down their names upon the liſts as ſubſcribers, and that is the good effects which their taking an active part in the undertaking will probably produce *on themſelves*.—Nothing tends more to mend the heart, and awaken in the mind a regard for character, than acts of charity and benevolence; and any perſon who has once felt that honeſt pride and ſatisfaction which reſult from a conſciouſneſs of having been inſtrumental in doing good by relieving the wants of the Poor, will be rendered doubly careful to avoid the humiliation of becoming himſelf an object of public charity.

It was a conſideration of theſe ſalutary effects, which may always be expected to be produced upon the minds of thoſe who take an active and *voluntary* part in the meaſures adopted for the relief of the Poor, that made me prefer voluntary ſubſcriptions, to taxes, in raiſing the ſums neceſſary for the ſupport of the Poor; and all the experience I have had in theſe matters has tended to confirm me in the opinion I have always had of their ſuperior utility.—Not only day-labourers and domeſtic ſervants, but their young children, and all the children of the nobility and other inhabitants of Munich, and even the non-commiſſioned officers and private ſoldiers of the regiments in garriſon in that city, were invited to contribute to the ſupport of the inſtitution for the poor; and there are very few indeed of any age or condition (paupers only excepted) whoſe names are not to be found on the liſts of ſubſcribers.

The ſubſcriptions at Munich are by families, as has elſewhere been obſerved; and this method I would recommend in the caſe under conſideration, and in all others.—The head of the family takes the trouble to collect all the ſums ſubſcribed upon his family-liſt, and to pay them into the hands of thoſe who (on the part of the inſtitution) are ſent round on the firſt Sunday morning of every month to receive them; but the names of all the individuals who compoſe the family are entered on the liſt at full length, with the ſum each contributes.

Two liſts of the ſame tenor muſt be made out for each family; one of which muſt be kept by the head of the family for his information and direction, and the other ſent in to thoſe who have the general direction of the Eſtabliſhment.

Theſe ſubſcription-liſts ſhould be printed; and they ſhould be carried round and left with the heads of families, either by the perſon himſelf who undertakes to form the Eſtabliſhment, (which will always be beſt,) or at leaſt by his ſteward, or ſome other perſon of ſome conſequence belonging to his houſehold.—Forms or models for theſe liſts may be ſeen in the Appendix.

When theſe liſts are returned, the perſon who has undertaken to form the Eſtabliſhment will ſee what pecuniary aſſiſtance he is to expect; and he will either arrange his plan, or determine the ſum he may think proper to contribute himſelf, according to that amount.—He will likewiſe conſider how far it will be poſſible and *adviſable* to connect his ſcheme with any Eſtabliſhment for the relief of the Poor already exiſting; or to act in concert with thoſe in whoſe

whoſe hands the management of the Poor is veſted by the laws.—Theſe circumſtances are all important; and the manner of proceeding in carrying the propoſed ſcheme into execution muſt, in a great meaſure, be determined by them. Nothing, however, can prevent the undertaking from being finally ſucceſsful, provided the means uſed for making it ſo are adopted with caution, and purſued with perſeverance.

However adverſe thoſe may be to the ſcheme, who, were they well diſpoſed, could moſt effectually contribute to its ſucceſs—yet no oppoſition which can be given to it by *intereſted perſons*,—ſuch as find means to derive profit to themſelves in the adminiſtration of the affairs of the Poor;—no oppoſition, I ſay, from ſuch perſons, (and none ſurely but theſe can ever be deſirous of oppoſing it,) can prevent the ſucceſs of a meaſure ſo evidently calculated to increaſe the comforts and enjoyments of the Poor, and to promote the general good of ſociety.

If the overſeers of the Poor, and other pariſh officers, and a large majority of the principal inhabitants, could be made to enter warmly into the ſcheme, it might, and certainly would, in many caſes, be poſſible, even without any new laws or acts of parliament being neceſſary to authorize the undertaking, to ſubſtitute the arrangements propoſed in the place of the old method of providing for the Poor;—aboliſhing entirely, or in ſo far as it ſhould be found neceſſary,—the old ſyſtem, and carrying the ſcheme propoſed into execution as a *general meaſure*.

In

In all caſes where this can be effected, it ought certainly to be preferred to any private or leſs general inſtitution; and individuals, who, by their exertions, are inſtrumental in bringing about ſo uſeful a change, will render a very eſſential ſervice to ſociety:—But even in caſes where it would not be poſſible to carry the ſcheme propoſed into execution in its fulleſt extent, much good may be done by individuals in affluent circumſtances to the Poor, by forming *private Eſtabliſhments* for feeding them and giving them employment.

Much relief may likewiſe be afforded them by laying in a large ſtock of fuel, purchaſed when it is cheap, and retailing it out to them in ſmall quantities, in times of ſcarcity, at the prime coſt.

It is hardly to be believed how much the Poor of Munich have been benefited by the Eſtabliſhment of the Wood-magazine, from which they are furniſhed in winter, during the ſevere froſts, with firewood at the price it coſts when purchaſed in ſummer, in large quantities, and at the cheapeſt rate. And this arrangement may eaſily be adopted in all countries, and by private individuals as well as by communities. Stores may likewiſe be laid in of potatoes, peas, beans, and other articles of food, to be diſtributed to the Poor in like manner, in ſmall quantities, and at low prices; which will be a great relief to them in times of ſcarcity. It will hardly be neceſſary for me to obſerve, that in adminiſtering this kind of relief to the Poor it will often be neceſſary to take precautions to prevent abuſes.

Another way in which private individuals may greatly aſſiſt the Poor, is, by ſhewing them how they may make themſelves more comfortable in their dwellings.

Nothing is more perfectly miſerable and comfortleſs than the domeſtic arrangement of poor families in general; they ſeem to have no idea whatever of order or economy in any thing; and every thing about them is dreary, ſad, and neglected, in the extreme. A little attention to order and arrangement would contribute greatly to their comfort and convenience, and alſo to economy. They ought in particular to be ſhewn how to keep their habitations warm in winter, and to economiſe fuel, as well in heating their rooms, as in cooking, waſhing, &c.

It is not to be believed what the waſte of fuel really is, in the various proceſſes in which it is employed in the economy of human life; and in no caſe is this waſte greater than in the domeſtic management of the Poor. Their fire-places are in general conſtructed upon the moſt wretched principles; and the fuel they conſume in them, inſtead of heating their rooms, not unfrequently renders them really colder, and more uncomfortable, by cauſing ſtrong currents of cold air to flow in from all the doors and windows to the chimney. This imperfection of their fire-places may be effectually remedied;—theſe currents of cold air prevented,—above half their fuel ſaved,—and their dwellings made infinitely more comfortable, merely by diminiſhing their fire-places, and the throats of their chimnies juſt above the mantle-piece; which may be done at a very trifling expence, with a few bricks or ſtones, and a little mortar, by the moſt ordinary bricklayer. And with regard to the expence of fuel for cooking, ſo ſimple a contrivance as an earthen pot, broad at top, for receiving a ſtew-pan, or kettle, and narrow at bottom, with holes through its ſides near the

the bottom, for letting in air under a ſmall circular iron grate, and other ſmall holes near the top for letting out the ſmoke, may be introduced with great advantage. By making uſe of this little portable furnace, (which is equally well adapted to burn wood or coals,)—one eighth part of the fuel will be ſufficient for cooking, which would be required were the kettle to be boiled over an open fire.—To ſtrengthen this portable furnace, it may be hooped with iron hoops, or bound round with ſtrong iron wire:—but I forget that I am anticipating the ſubject of a future Eſſay.

Much good may alſo be done to the Poor by teaching them how to prepare various kinds of cheap and wholeſome food, and to render them ſavoury and palatable.—The art of cookery, notwithſtanding its infinite importance to mankind, has hitherto been little ſtudied; and among the more indigent claſſes of ſociety, where it is moſt neceſſary to cultivate it, it ſeems to have been moſt neglected.—No preſent that could be made to a poor family could be of more eſſential ſervice to them than a thin, light ſtew-pan, with its cover, made of wrought, or caſt iron, and fitted to a portable furnace, or cloſe fire-place, conſtructed to ſave fuel; with two or three approved receipts for making nouriſhing and ſavoury ſoups and broths at a ſmall expence.

Such a preſent might alone be ſufficient to relieve a poor family from all their diſtreſſes, and make them permanently comfortable; for the expences of a poor family for food might, I am perſuaded, in moſt caſes be diminiſhed *one half* by a proper attention to cookery, and to the economy of fuel; and the change in the circumſtances of

ſuch a family, which would be produced by reducing their expences for food to one half what it was before, is eaſier to be conceived than deſcribed.

It would hardly fail to re-animate the courage of the moſt deſponding;—to cheer their drooping ſpirits, and ſtimulate them to freſh exertions in the purſuits of uſeful induſtry.

As the only effectual means of putting an end to the ſufferings of the Poor is the introduction of a ſpirit of *induſtry* among them, individuals ſhould never loſe ſight of that great and important object, in all the meaſures they may adopt to relieve them.—But in endeavouring to make the Poor induſtrious, the utmoſt caution will be neceſſary to prevent their being diſguſted.—Their minds are commonly in a ſtate of great irritation, the natural conſequence of their ſufferings, and of their hopeleſs ſituation; and their ſuſpicions of every body about them, and particularly of thoſe who are ſet over them, are ſo deeply rooted that it is ſometimes extremely difficult to ſoothe and calm the agitation of their minds, and gain their confidence. —This can be ſooneſt and moſt effectually done by kind and gentle uſage; and I am clearly of opinion that no other means ſhould ever be uſed, except it be with ſuch hardened and incorrigible wretches as are not to be reclaimed by any means; but of theſe, I believe, there are very few indeed.—I have never yet found one, in all the courſe of my experience in taking care of the Poor.

We have ſometimes been obliged to threaten the moſt idle and profligate with the houſe of correction; but theſe threats, added to the fear of being baniſhed from the Houſe of Induſtry, which has

has always been held up and conſidered as the greateſt puniſhment, have commonly been ſufficient for keeping the unruly in order.

If the force of example is irriſiſtible in *debauching men's minds*, and leading them into profligate and vicious courſes, it is not leſs ſo in *reclaiming them*, and rendering them orderly, docile, and induſtrious; and hence the infinite importance of collecting the Poor together in Public Eſtabliſhments, where every thing about them is animated by unaffected cheerfulneſs, and by that pleaſing gaiety, and air of content and ſatisfaction, which always enliven the buſy ſcenes of uſeful induſtry.

I do not believe it would be poſſible for any perſon to be idle in the Houſe of Induſtry at Munich. I never ſaw any one idle; often as I have paſſed through the working rooms; nor did I ever ſee any one to whom the employments of induſtry ſeemed to be painful or irkſome.

Thoſe who are collected together in the public rooms deſtined for the reception and accommodation of the Poor in the day-time, will not need to be forced, nor even urged to work;—if there are in the room ſeveral perſons who are buſily employed in the cheerful occupations of induſtry, and if implements and materials for working are at hand, all the others preſent will not fail to be ſoon drawn into the vortex, and joining with alacrity in the active ſcene, their diſlike to labour will be forgotten, and they will become by habit truly and permanently induſtrious.

Such is the *irreſiſtible power of example!*—Thoſe who know how to manage this mighty engine, and have opportunities of employing it with

effect, may produce the moſt miraculous changes, in the manners, diſpoſition, and character, even of whole nations.

In furniſhing raw materials to the Poor to work, it will be neceſſary to uſe many precautions to prevent frauds and abuſes, not only on the part of the Poor, who are often but too much diſpoſed to cheat and deceive whenever they find opportunities, but alſo on the part of thoſe employed in the details of this buſineſs:—but the fulleſt information having already been given in my Firſt Eſſay, of all the various precautions it had been found neceſſary to take for the purpoſes in queſtion in the Houſe of Induſtry at Munich, it is not neceſſary for me to enlarge upon the ſubject in this place, or to repeat what has already been ſaid upon it elſewhere.

With regard to the manner in which good and wholeſome food for feeding the Poor may be prepared in a public kitchen, at a cheap rate, I muſt refer my reader to my Eſſay on Food; where he will find all the information on that ſubject which he can require.—In my Eſſay on Clothing, he will ſee how good and comfortable clothing may be furniſhed to the Poor at a very moderate expence; and in that on the Management of Heat, he will find particular directions for the Poor for ſaving fuel.

I cannot finiſh this Eſſay without taking notice of a difficulty which will frequently occur in giving employment to the Poor, that of diſpoſing to advantage of the produce of their labour:—This is in all caſes a very important object; and too much attention cannot be paid to it.—A ſpirit of induſtry

cannot

cannot be kept up but by making it advantageous to individuals to be induſtrious; but where the wages which the labourer has a right to expect are refuſed, it will not be poſſible to prevent his being diſcouraged and diſguſted.—He may perhaps be forced for a certain time to work for ſmall wages, to prevent ſtarving, if he has not the reſource of throwing himſelf upon the pariſh, which he moſt probably would prefer doing, ſhould it be in his option; but he will infallibly conceive ſuch a thorough diſlike to labour, that he will become idle and vicious, and a permanent and heavy burden on the public.

If "a labourer is worthy of his hire," he is peculiarly ſo, where that labourer is a poor perſon, who, with all his exertions, can barely procure the firſt neceſſaries of life; and whoſe hard lot renders him an object of pity and compaſſion.

The deplorable ſituation of a poor family, ſtruggling with poverty and want,—deprived of all the comforts and conveniencies of life—deprived even of hope; and ſuffering at the ſame time from hunger, diſeaſe, and mortifying and cruel diſappointment, is ſeldom conſidered with that attention which it deſerves, by thoſe who have never felt theſe diſtreſſes, and who are not in danger of being expoſed to them. My reader muſt pardon me, if I frequently recal his attention to theſe ſcenes of miſery and wretchedneſs. He muſt be made acquainted with the real ſituation of the Poor—with the extent and magnitude of their misfortunes and ſufferings, before it can be expected that he ſhould enter warmly into meaſures calculated for their relief.

In

In forming Eſtabliſhments, public or private, for giving employment to the Poor, it will always be indiſpenſably neceſſary to make ſuch arrangements as will ſecure to them a fair price for all the labour they perform. They ſhould not be *over-paid*, for that would be opening a door for abuſe;—but they ought to be generouſly paid for their work; and, above all, they ought never to be allowed to be idle for the want of employment. The kind of employment it may be proper to give them will depend much on local circumſtances. It will depend on the habits of the Poor;—the kinds of work they are acquainted with;—and the facility with which the articles they can manufacture may be diſpoſed of at a good price.

In very extenſive Eſtabliſhments, there will be little difficulty in finding uſeful employment for the Poor; for where the number of perſons to be employed is very great, a great variety of different manufactures may be carried on with advantage, and all the articles manufactured, or prepared to be employed in manufactures, may be turned to a good account.

In a ſmall Eſtabliſhment, circumſcribed and confined to the limits of a ſingle village or pariſh, it might perhaps be difficult to find a good market for the yarn ſpun by the Poor; but in a general Eſtabliſhment, extending over a whole county, or large city, as the quantity of yarn ſpun by all the Poor within the extenſive limits of the inſtitution will be ſufficient to employ conſtantly a number of weavers of different kinds of cloth and ſtuff, the market for all the various kinds of yarn the Poor may ſpin will always be certain. The ſame reaſoning will hold

hold with regard to various other articles uſed in great manufactories, upon which the Poor might be very uſefully employed; and hence the great advantage of making Eſtabliſhments for giving employment to the Poor as extenſive as poſſible. It is what I have often inſiſted on, and what I cannot too ſtrongly recommend to all thoſe who engage in forming ſuch Eſtabliſhments.

Although I certainly ſhould not propoſe to *bring together*, under one roof, all the Poor of a whole kingdom, as, by the inſcription over the entrance into a vaſt hoſpital, began, but not finiſhed, at Naples, it would appear was once the intention of the government in that country; yet I am clearly of opinion that an inſtitution for *giving employment to the Poor* can hardly be too extenſive.

But to return to the ſubject to which this Chapter was more particularly appropriated, the relief that may be afforded by private individuals to the Poor in their neighbourhood; in caſe it ſhould not be poſſible to get over all the difficulties that may be in the way to prevent the forming of a general Eſtabliſhment for the benefit of the Poor, individuals muſt content themſelves with making ſuch private arrangements for that purpoſe as they may be able, *with ſuch aſſiſtance as they can command*, to carry into execution.

The moſt ſimple, and leaſt expenſive meaſure that can be adopted for the aſſiſtance of the Poor will be that of furniſhing them with raw materials for working. Flax, hemp, or wool, for inſtance, for ſpinning; and paying them in money, at the market price, for the yarn ſpun. This yarn may afterwards be ſent to weavers to be manufactured

into

into cloth, or may be ſent to ſome good market and ſold. The details of theſe mercantile tranſactions will be neither complicated nor troubleſome, and might eaſily be managed by a ſteward or houſe-keeper; particularly if the printed tickets, and tables, I have ſo often had occaſion to recommend, are uſed.

The flax, hemp, or wool, as ſoon as it is purchaſed, ſhould be weighed out into bundles of one or two pounds each, and lodged in a ſtore-room; and when one of theſe bundles is delivered out to a poor perſon to be ſpun, it ſhould be accompanied with a printed ſpin-ticket, and entered in a table to be kept for that purpoſe; and when it is returned ſpun, an abſtract of the ſpin-ticket, with the name of the ſpinner, or the ſpin-ticket itſelf, ſhould be bound up with the bundle of yarn, in order that any frauds committed by the ſpinner, in reeling, or in any other way, which may be diſcovered upon winding off the yarn, may be brought home to the perſon who committed them. When it is known that ſuch effectual precautions to detect frauds are uſed, no farther attempts will be made to defraud; and a moſt important point indeed will be gained, and one which will moſt powerfully tend to mend the morals of the Poor, and reſtore peace to their minds. When, by rendering it evidently impoſſible for them to eſcape detection, they are brought to give up all thoughts of cheating and deceiving; they will then be capable of application, and of enjoying real happineſs, and, with open and placid countenances, will look every one full in the face who accoſts them: but as long as they are under the influence of temptation—as long as their minds are de-

graded by conſcious guilt, and continually agitated by ſchemes of proſecuting their fraudulent practices, they are as incapable of enjoying peace or contentment, as they are of being uſeful members of ſociety.

Hence the extreme cruelty of an ill-judged appearance of confidence, or careleſs neglect of precautions, in regard to thoſe employed in places of truſt, who may be expoſed to temptations to defraud.

That prayer, which cannot be enough admired, or too often repeated, "LEAD US NOT INTO "TEMPTATION," was certainly dictated by infinite wiſdom and goodneſs; and it ſhould ever be borne in mind by thoſe who are placed in ſtations of power and authority, and whoſe meaſures muſt neceſſarily have much influence on the happineſs or miſery of great numbers of people.

Honeſt men may be found in all countries; but I am ſorry to ſay, that the reſult of all my experience and obſervation has tended invariably to prove, (what has often been remarked,) that it is extremely difficult to *keep thoſe honeſt* who are expoſed to continual and great temptations.

There is, however, one moſt effectual way, not only of keeping thoſe honeſt who are ſo already, but alſo of making thoſe honeſt who are not ſo; and that is, by taking ſuch precautions as will render it *evidently* impoſſible for thoſe who commit frauds to eſcape detection and puniſhment: and theſe precautions are never impoſſible, and ſeldom difficult; and with a little addreſs, they may always be ſo taken as to be in nowiſe offenſive to thoſe who are the objects of them.

It is evident that the maxims and meaſures here recommended are not applicable merely to the Poor,

Poor, but alſo, and more eſpecially, to thoſe who may be employed in the details of relieving them.

But to return once more to the ſubject more immediately under conſideration.—If individuals ſhould extend their liberality ſo far as to eſtabliſh public kitchens for feeding the Poor, (which is a meaſure I cannot too often, or too forcibly recommend,) it would be a great pity not to go one eaſy ſtep further, and fit up a few rooms adjoining to the kitchen, where the Poor may be permitted to aſſemble to work for their own emolument, and where ſchools for inſtructing the children of the Poor in working and in reading and writing, may be eſtabliſhed. Neither the fitting up, or warming and lighting of theſe rooms, will be attended with any conſiderable expence; while the advantages which will be derived from ſuch an Eſtabliſhment for encouraging induſtry, and contributing to the comfort of the Poor, will be moſt important; and from their peculiar nature, and tendency, will be moſt highly intereſting to every benevolent mind.

END OF THE SECOND ESSAY.

ESSAY III.

OF FOOD;

AND PARTICULARLY OF

FEEDING THE POOR.

ESSAY III.

INTRODUCTION.

IT is a common ſaying, that "*neceſſity is the mother of invention*;" and nothing is more ſtrictly or more generally true. It may even be ſhown, that moſt of the ſucceſſive improvements in the affairs of men in a ſtate of civil ſociety, of which we have any authentic records, have been made under the preſſure of neceſſity; and it is no ſmall conſolation, in times of general alarm, to reflect upon the probability that, upon ſuch occaſions, uſeful diſcoveries will reſult from the united exertions of thoſe who, either from motives of fear, or ſentiments of benevolence, labour to avert the impending evil.

The alarm in this country at the preſent period *, on account of the high price of corn, and the danger of a ſcarcity, has turned the attention of the Public to a very important ſubject, *the inveſtigation of the ſcience of nutrition*;—a ſubject ſo curious in itſelf, and ſo highly intereſting to mankind, that it ſeems truly aſtoniſhing it ſhould have been ſo long neglected; but in the manner in which it is now taken up, both by the Houſe of Commons, and the Board of Agriculture, there is great reaſon to

* November 1795.

hope that it will receive a thorough ſcientific examination; and if this ſhould be the caſe, I will venture to predict, that *the important diſcoveries, and improvements, which muſt reſult from theſe enquiries, will render the alarms which gave riſe to them for ever famous in the annals of civil ſociety.*

CHAP. I.

Great Importance of the Subject under Conſideration.—Probability that WATER *acts a much more important Part in Nutrition than has hitherto been generally imagined.—Surpriſingly ſmall Quantity of ſolid Food neceſſary, when properly prepared, for all the Purpoſes of Nutrition.—Great Importance of the Art of Cookery.—Barley remarkably nutritive when properly prepared.—The Importance of culinary Proceſſes for preparing Food ſhewn from the known Utility of a Practice common in ſome Parts of Germany of cooking for Cattle.—Difficulty of introducing a Change of Cookery into common Uſe.—Means that may be employed for that Purpoſe.*

THERE is, perhaps, no operation of Nature, which falls under the cognizance of our ſenſes, more ſurpriſing, or more curious, than the nouriſhment and growth of plants, and animals; and there is certainly no ſubject of inveſtigation more intereſting to mankind.—As providing ſubſiſtence is, and ever muſt be, an object of the firſt concern in all countries, any diſcovery or improvement by which

the procuring of good and wholeſome food can be facilitated, muſt contribute very powerfully to increaſe the comforts, and promote the happineſs of ſociety.

That our knowledge in regard to the *ſcience of nutrition* is ſtill very imperfect, is certain; but, I think, there is reaſon to believe, that we are upon the eve of ſome very important diſcoveries relative to that myſterious operation.

Since it has been known that Water is not a ſimple element, but a *compound*, and capable of being decompoſed, much light has been thrown upon many operations of nature which formerly were wrapped up in obſcurity. In vegetation, for inſtance, it has been rendered extremely probable, that water acts a much more important part than was formerly aſſigned to it by philoſophers.—That it ſerves not merely as the *vehicle* of nouriſhment, but conſtitutes at leaſt one part, and probably an eſſential part, of the *Food* of plants.—That it is decompoſed by them, and contributes *materially* to their growth;—and that manures ſerve rather to prepare the water for decompoſition, than to form of themſelves—ſubſtantially, and directly—the nouriſhment of the vegetables.

Now, a very clear analogy may be traced, between the vegetation and growth of plants, and the digeſtion and nouriſhment of animals; and as water is indiſpenſably neceſſary in both proceſſes, and as in one of them, (vegetation,) it appears evidently to ſerve as *Food*;—why ſhould we not ſuppoſe it may ſerve as food in the other?—There

is,

is, in my opinion, abundant reaſon to ſuſpect that this is really the caſe; and I ſhall now briefly ſtate the grounds upon which this opinion is founded.—Having been engaged for a conſiderable length of time in providing Food for the Poor at Munich, I was naturally led, as well by curioſity as motives of economy, to make a great variety of experiments upon that ſubject; and I had not proceeded far in my operations, before I began to perceive that they were very important;—even much more ſo than I had imagined.

The difference in the apparent goodneſs, or the palatableneſs, and apparent nutritiouſneſs of the ſame kinds of Food, when prepared or cooked in different ways, ſtruck me very forcibly; and I conſtantly found that the richneſs or *quality* of a ſoup depended more upon a proper choice of the ingredients, and a proper management of the fire in the combination of thoſe ingredients, than upon the quantity of ſolid nutritious matter employed;—much more upon the art and ſkill of the cook, than upon the amount of the ſums laid out in the market.

I found likewiſe, that the nutritiouſneſs of a ſoup, or its power of ſatisfying hunger, and affording nouriſhment, appeared always to be in proportion to its apparent richneſs or palatableneſs.

But what ſurpriſed me not a little, was the diſcovery of the very ſmall quantity of *ſolid Food*, which, when properly prepared, will ſuffice to ſatisfy hunger, and ſupport life and health; and

the very trifling expence at which the ſtouteſt, and moſt laborious man may, in any country, be fed.

After an experience of more than five years in feeding the Poor at Munich, during which time every experiment was made that could be deviſed, not only with regard to the choice of the articles uſed as Food, but alſo in reſpect to their different combinations and proportions; and to the various ways in which they could be prepared or cooked; it was found that the *cheapeſt*, moſt *ſavoury*, and moſt *nouriſhing* Food that could be provided, was a ſoup compoſed of *pearl barley*, *peaſe*, *potatoes*, *cuttings of fine wheaten bread*, vinegar—ſalt and water, in certain proportions.

The method of preparing this ſoup is as follows: The water and the pearl barley are firſt put together into the boiler and made to boil; the peaſe are then added, and the boiling is continued over a gentle fire about two hours;—the potatoes are then added, (having been previouſly peeled with a knife, or having been boiled, in order to their being more eaſily deprived of their ſkins,) and the boiling is continued for about one hour more, during which time the contents of the boiler are frequently ſtirred about with a large wooden ſpoon, or ladle, in order to deſtroy the texture of the potatoes, and to reduce the ſoup to one uniform maſs.—When this is done, the vinegar and the ſalt are added; and laſt of all, at the moment it is to be ſerved up, the cuttings of bread.

The

The ſoup ſhould never be ſuffered to boil, or even to ſtand long before it is ſerved up after the cuttings of bread are put to it. It will, indeed, for reaſons which will hereafter be explained, be beſt never to put the cuttings of bread into the boiler at all, but, (as is always done at Munich,) to put them into the tubs in which the ſoup is carried from the kitchen into the dining-hall; pouring the ſoup hot from the boiler upon them, and ſtirring the whole well together with the iron ladles uſed for meaſuring out the ſoup to the Poor in the hall.

It is of more importance than can well be imagined, that this bread, which is mixed with the ſoup, ſhould not be boiled. It is likewiſe of uſe that it ſhould be cut as fine or thin as poſſible; and if it be dry and hard, it will be ſo much the better.

The bread we uſe in Munich is what is called *ſemel* bread, being ſmall loaves, weighing from two or three ounces; and as we receive this bread in donations from the bakers, it is commonly dry and hard, being that which, not being ſold in time, remains on hand, and becomes ſtale and unſaleable; and we have found by experience, that this hard and ſtale bread anſwers for our purpoſe much better than any other, for it renders maſtication neceſſary; and maſtication ſeems very powerfully to aſſiſt in promoting digeſtion: it likewiſe *prolongs the duration of the enjoyment of eating*, a matter of very great importance indeed, and which has not hitherto been ſufficiently attended to.

The

The quantity of this ſoup furniſhed to each perſon, at each meal, or one portion of it, (the cuttings of bread included,) is juſt *one Bavarian pound* in weight; and as the Bavarian pound is to the pound Avoirdupois as 1.123842 to 1,—it is equal to about nineteen ounces and nine-tenths Avoirdupois. Now, to thoſe who know that a full pint of ſoup weighs no more than about ſixteen ounces Avoirdupois, it will not, perhaps, at the firſt view, appear very extraordinary that a portion weighing near twenty ounces, and conſequently making near *one pint and a quarter* of this rich, ſtrong, ſavoury ſoup, ſhould be found ſufficient to ſatisfy the hunger of a grown perſon; but when the matter is examined narrowly, and properly analyzed, and it is found that the whole quantity of *ſolid food* which enters into the compoſition of one of theſe portions of ſoup, does not amount to quite *ſix ounces*, it will then appear to be almoſt impoſſible that this allowance ſhould be ſufficient.

That it is quite ſufficient, however, to make a good meal for a ſtrong healthy perſon, has been abundantly proved by long experience. I have even found that a ſoup compoſed of nearly the ſame ingredients, except the potatoes, but in different proportions, was ſufficiently nutritive, and very palatable, in which only about *four ounces and three quarters* of ſolid Food entered into the compoſition of a portion weighing twenty ounces.

But this will not appear incredible to thoſe who know, that one ſingle ſpoonful of *ſalope*, weighing leſs than one quarter of an ounce, put into a pint

pint of boiling water, forms the thickeſt and moſt nouriſhing ſoup that can be taken; and that the quantity of ſolid matter which enters into the compoſition of another very nutritive Food, *hartſhorn jelly*, is not much more conſiderable.

The *barley* in my ſoup, ſeems to act much the ſame part as the *ſalope* in this famous reſtorative; and no ſubſtitute that I could ever find for it among all the variety of corn and pulſe of the growth of Europe, ever produced half the effect; that is to ſay, half the nouriſhment at the ſame expence. *Barley* may therefore be conſidered as the *rice of Great Britain.*

It requires, it is true, a great deal of boiling; but when it is properly managed, it *thickens* a vaſt quantity of water; and, as I ſuppoſe, *prepares it for decompoſition.* It alſo gives the ſoup into which it enters as an ingredient, a degree of richneſs which nothing elſe can give. It has little or no taſte in itſelf, but when mixed with other ingredients which are ſavoury, it renders them peculiarly grateful to the palate *.

It is a maxim, as ancient, I believe, as the time of Hippocrates, that "*whatever pleaſes the palate* "*nouriſhes*;" and I have often had reaſon to think it perfectly juſt. Could it be clearly aſcertained

* The preparation of water is, in many caſes, an object of more importance than is generally imagined; particularly when it is made uſe of as a vehicle for conveying agreeable taſtes. In making *punch*, for inſtance, if the water uſed be previouſly boiled two or three hours with a handful of rice, the punch made of it will be incomparably better, that is to ſay, more full and luſcious upon the palate, than when the water is not prepared.

and

and demonſtrated, it would tend to place *cookery* in a much more reſpectable ſituation among the arts than it now holds.

That the manner in which Food is prepared is a matter of real importance; and that the water uſed in that proceſs acts a much more important part than has hitherto been generally imagined, is, I think, quite evident; for, it ſeems to me to be impoſſible, upon any other ſuppoſition, to account for the appearances. If the very ſmall quantity of ſolid Food which enters into the compoſition of a portion of ſome very nutritive ſoup were to be prepared differently, and taken under ſome other form, that of bread, for inſtance; ſo far from being ſufficient to ſatisfy hunger, and afford a comfortable and nutritive meal, a perſon would abſolutely ſtarve upon ſuch a ſlender allowance; and no great relief would be derived from drinking *crude* water to fill up the void in the ſtomach.

But it is not merely from an obſervation of the apparent effects of cookery upon thoſe articles which are uſed as Food for man, that we are led to diſcover the importance of theſe culinary proceſſes. Their utility is proved in a manner equally concluſive and ſatisfactory, by the effects which have been produced by employing the ſame proceſs in preparing Food for brute animals.

It is well known, that boiling the potatoes with which hogs are fed, renders them much more nutritive; and ſince the introduction of the new ſyſtem of feeding horned cattle, that of keeping them confined in the ſtables all the year round, (a method

method which is now coming faſt into common uſe in many parts of Germany,) great improvements have been made in the art of providing nouriſhment for thoſe animals; and particularly by preparing their Food, by operations ſimilar to thoſe of cookery; and to theſe improvements it is moſt probably owing, that ſtall feeding has, in that country, been ſo univerſally ſucceſsful.

It has long been a practice in Germany for thoſe who fatten bullocks for the butcher, or feed milch-cows, to give them frequently what is called a *drank*, or *drink*; which is a kind of pottage, prepared differently in different parts of the country, and in the different ſeaſons, according to the greater facility with which one or other of the articles occaſionally employed in the compoſition of it may be procured; and according to the particular fancies of individuals. Many feeders make a great ſecret of the compoſition of their *drinks*, and ſome have, to my knowledge, carried their refinement ſo far as actually to mix brandy in them, in ſmall quantities; and pretend to have found their advantage in adding this coſtly ingredient.

The articles moſt commonly uſed are, bran, oatmeal, brewers' grain, maſhed potatoes, maſhed turnips, rye meal, and barley meal, with a large proportion of water; ſometimes two or three or more of theſe articles are united in forming a *drink*; and of whatever ingredients the drink is compoſed, a large proportion of ſalt is always added to it.

There is, perhaps, nothing new in this method of feeding cattle with liquid mixtures; but the manner

manner in which theſe drinks are now prepared in Germany is, I believe, quite new; and ſhews what I wiſh to prove, that *cooking renders food really more nutritive.*

Theſe drinks were formerly given cold, but it was afterwards diſcovered that they were more nouriſhing when given warm; and of late their preparation is, in many places, become a very regular culinary proceſs. Kitchens have been built, and large boilers provided and fitted up, merely for cooking for the cattle in the ſtables; and I have been aſſured by many very intelligent farmers, who have adopted this new mode of feeding, (and have alſo found by my own experience,) that it is very advantageous indeed; that the drinks are evidently rendered much more nouriſhing and wholeſome by being boiled; and that the expence of fuel, and the trouble attending this proceſs, are amply compenſated by the advantages derived from the improvement of the Food. We even find it advantageous to continue the boiling a conſiderable time, two or three hours, for inſtance; as the Food goes on to be ſtill farther improved, the longer the boiling is continued *.

* I cannot diſmiſs the ſubject, the feeding of cattle, without juſt mentioning another practice common among our beſt farmers in Bavaria, which, I think, deſerves to be known. They chop the green clover with which they feed their cattle, and mix with it a conſiderable quantity of chopped ſtraw. They pretend that this rich ſucculent graſs is of ſo clammy a nature, that unleſs it be mixed with chopped ſtraw, hay, or ſome other dry fodder, cattle which are fed with it do not ruminate (chew the cud) ſufficiently. The uſual proportion of the clover to the ſtraw, is as two to one.

Theſe facts ſeem evidently to ſhow, that there is ſome very important ſecret with regard to nutrition, which has not yet been properly inveſtigated; and it ſeems to me to be more than probable, that the number of inhabitants who may be ſupported in any country, upon its internal produce, depends almoſt as much upon the ſtate of *the art of cookery*, as upon that of *agriculture*.—The Chineſe, perhaps, underſtand both theſe arts better than any other nation.—Savages underſtand neither of them.

But, if cookery be of ſo much importance, it certainly deſerves to be ſtudied with the greateſt care; and it ought particularly to be attended to in times of general alarm on account of a ſcarcity of proviſions; for the relief which may in ſuch caſes be derived from it, is immediate and effectual; while all other reſources are diſtant and uncertain.

I am aware of the difficulties which always attend the introduction of meaſures calculated to produce any remarkable change in the cuſtoms and habits of mankind; and there is perhaps no change more difficult to effect, than that which would be neceſſary in order to make any conſiderable ſaving in the conſumption of thoſe articles commonly uſed as Food; but ſtill, I am of opinion, that ſuch a change might, with proper management, be brought about.

There was a time, no doubt, when an averſion to potatoes was as general, and as ſtrong, in Great Britain, and even in Ireland, as it is now in ſome parts of Bavaria; but this prejudice has been got over; and I am perſuaded, that any national prejudice,

prejudice, however deeply rooted, may be overcome, provided proper means be uſed for that purpoſe, and time allowed for their operation.

But notwithſtanding the difficulty of introducing a general uſe of *ſoups* throughout the country, or of any other kind of Food, however palatable, cheap, and nouriſhing, to which people have not been accuſtomed, yet theſe improvements might certainly be made, with great facility, in all public hoſpitals and work-houſes, where the Poor are fed at the public expence; and the ſaving of proviſions, (not to mention the diminution of expence,) which might be derived from this improvement, would be very important at all times, and more eſpecially in times of general ſcarcity.

Another meaſure, ſtill more important, and which might, I am perſuaded, be eaſily carried into execution, is the eſtabliſhment of public kitchens in all towns, and large villages, through the kingdom; whence, not only the infirm Poor might be fed *gratis*, but alſo all the induſtrious inhabitants of the neighbourhood might be furniſhed with Food at ſo cheap a rate, as to be a very great relief to them at all times; and in times of general ſcarcity, this arrangement would alone be ſufficient to prevent thoſe public and private calamities which never fail to accompany that moſt dreadful of all viſitations, a famine.

The ſaving of Food that would reſult from feeding a large proportion of the inhabitants of any country from *public kitchens*, would be immenſe, and that ſaving would tend, immediately, and

and moſt powerfully, to render proviſions more plentiful and cheap,—diminiſh the general alarm on account of the danger of a ſcarcity, and prevent the hoarding up of proviſions by individuals, which is often alone ſufficient, without any thing elſe, to bring on a famine, even where there is no real ſcarcity: for it is not merely the *fears* of individuals which operate in theſe caſes, and induce them to lay in a larger ſtore of proviſions than they otherwiſe would do; and which naturally increaſes the ſcarcity of proviſions in the market, and raiſes their prices; but there are perſons who are ſo loſt to all the feelings of humanity, as often to *ſpeculate* upon the diſtreſs of the Public; and all *their* operations effectually tend to increaſe the ſcarcity in the markets and augment the general alarm.

But without enlarging farther in this place upon theſe public kitchens, and the numerous and important advantages which may in all countries be derived from them, I ſhall return to the intereſting ſubjects which I have undertaken to inveſtigate;—*the ſcience of nutrition*, and the *art* of providing wholeſome and palatable Food at a ſmall expence.

CHAP. II.

Of the Pleaſure of Eating, and of the Means that may be employed for increaſing it.

WHAT has already been ſaid upon the ſubject under conſideration will, I flatter myſelf, be thought ſufficient to ſhow that, *for all the purpoſes of nouriſhment*, a much ſmaller quantity of ſolid Food will ſuffice than has hitherto been thought neceſſary; but there is another circumſtance to be taken into the account, and that is, the *pleaſure of eating*; —an enjoyment of which no perſon will conſent to be deprived.

The pleaſure enjoyed in eating depends, firſt, upon the agreeableneſs of the taſte of the Food; and, ſecondly, upon its power to affect the palate. Now there are many ſubſtances extremely cheap, by which very agreeable taſtes may be given to Food; particularly when the baſis or nutritive ſubſtance of the Food is taſteleſs; and the effect of any kind of palatable ſolid Food, (of meat, for inſtance,) upon the organs of taſte, may be increaſed almoſt indefinitely, by reducing the ſize of the particles of ſuch Food, and cauſing it to act upon the palate by a larger ſurface. And if means be uſed to prevent its being ſwallowed too ſoon, which may be eaſily done by mixing with it ſome hard and taſteleſs ſubſtance, ſuch as crumbs of bread rendered hard by toaſting or any thing elſe of that kind, by which a long maſtication is rendered neceſſary,

ceſſary, the enjoyment of eating may be greatly increaſed and prolonged.

The idea of occupying a perſon a great while, and affording him much pleaſure at the ſame time, in eating a ſmall quantity of Food, may, perhaps, appear ridiculous to ſome; but thoſe who conſider the matter attentively, will perceive that it is very important. It is, perhaps, as much ſo as any thing that can employ the attention of the philoſopher.

The enjoyments which fall to the lot of the bulk of mankind are not ſo numerous as to render an attempt to increaſe them ſuperfluous. And even in regard to thoſe who have it in their power to gratify their appetites to the utmoſt extent of their wiſhes, it is ſurely rendering them a very important ſervice to ſhow them how they may increaſe their pleaſures without deſtroying their health.

If a glutton can be made to gormandize two hours upon two ounces of meat, it is certainly much better for him, than to give himſelf an indigeſtion by eating two pounds in the ſame time.

I was led to meditate upon this ſubject by mere accident. I had long been at a loſs to underſtand how the Bavarian ſoldiers, who are uncommonly ſtout, ſtrong, and healthy men, and who, in common with all other Germans, are remarkably fond of eating, could contrive to live upon the very ſmall ſums they expend for Food; but a more careful examination of the economy of their tables cleared up the point, and let me into a ſecret

which awakened all my curioſity. Theſe ſoldiers, inſtead of being ſtarved upon their ſcanty allowance, as might have been ſuſpected, I found actually living in a moſt comfortable and even luxurious manner. I found that they had contrived not only to render their Food ſavoury and nouriſhing, but, what appeared to me ſtill more extraordinary, had found out the means of increaſing its action upon the organs of taſte ſo as actually to augment, and even prolong to a moſt ſurpriſing degree, the enjoyment of eating.

This accidental diſcovery made a deep impreſſion upon my mind, and gave a new turn to all my ideas on the ſubject of Food.—It opened to me a new and very intereſting field for inveſtigation and experimental inquiry, of which I had never before had a diſtinct view; and thenceforward my diligence in making experiments, and in collecting information relative to the manner in which Food is prepared in different countries, was redoubled.

In the following Chapter may be ſeen the general reſults of all my experiments and inquiries relative to this ſubject.—A deſire to render this account as conciſe and ſhort as poſſible has induced me to omit much intereſting ſpeculation which the ſubject naturally ſuggeſted; but the ingenuity of the reader will ſupply this defect, and enable him to diſcover the objects particularly aimed at in the experiments, even where they are not mentioned, and to compare the reſults of practice with the aſſumed theory.

CHAP. III.

Of the different Kinds of Food furniſhed to the Poor in the Houſe of Induſtry at Munich, with an Account of the Coſt of them.—Of the Expence of providing the ſame Kinds of Food in Great Britain, as well at the preſent high Prices of Proviſions, as at the ordinary Prices of them.—Of the various Improvements of which theſe different Kinds of cheap Food are capable.

BEFORE the introduction of potatoes as Food in the Houſe of Induſtry at Munich, (which was not done till laſt Auguſt,) the Poor were fed with a ſoup compoſed in the following manner:

SOUP, N° I.

Ingredients.	Weight Avoirdupois. lb.	oz.		Coſt in ſterling money. £.	s.	d.
4 *viertls** of pearl barley, equal to about 20⅓ gallons - -	141	2	——	0	11	7½
4 *viertls* of peas - - - -	131	4	——	0	7	3¾
Cuttings of fine wheaten bread	69	10	——	0	10	2¾
Salt - - - - - -	19	13	——	0	1	2½
24 *maaſs*, very weak beer—vinegar, or rather ſmall beer turned ſour, about 24 quarts	46	13	——	0	1	5½
Water, about 560 quarts - -	1077	0				
	1485	10	——	1.	11	8½

* A *viertl* is the twelfth part of a ſchäfl, and the Bavarian ſchäfl is equal to $6\frac{31}{100}$ Wincheſter buſhels.

	£.	s.	d.
Brought over	1	11	$8\frac{1}{4}$
Fuel, 88lb. of dry pine wood, the Bavarian *clafter* (weighing 3961 lb. Avoirdupois,) at 8s. $2\frac{1}{4}$d. ſterling* - - - - - - - -	0	0	$2\frac{1}{4}$
Wages of three cook-maids, at twenty florins (37s. $7\frac{1}{2}$d.) a-year each, makes daily -	0	0	$3\frac{1}{3}$
Daily expence for feeding the three cook-maids, at ten creutzers ($3\frac{1}{3}$ pence ſterling) *each*, according to an agreement made with them -	0	0	$11\frac{1}{4}$
Daily wages of two men-ſervants, employed in going to market—collecting donations of bread, &c. helping in the kitchen, and aſſiſting in ſerving out the ſoup to the Poor -	0	1	$7\frac{1}{4}$
Repairs of the Kitchen, and of the kitchen furniture, about 90 florins (8l. 3s. 7d. ſterling) a-year, makes daily - -	0	0	$5\frac{1}{2}$
Total daily expences, when dinner is provided for 1200 perſons - - -	1	15	$2\frac{1}{4}$

This ſum (1l. 15s. $2\frac{1}{4}$d.) divided by 1200, the number of portions of ſoup furniſhed, gives for each portion a mere trifle more than *one third of a penny*, or exactly $\frac{422}{1200}$ of a penny; the weight of each portion being about 20 ounces.

But, moderate as theſe expences are, which have attended the feeding of the Poor of Munich, they have lately been reduced ſtill farther by introducing the uſe of potatoes.—Theſe moſt valuable vegetables were hardly known in Bavaria till very lately; and ſo ſtrong was the averſion of the Public, and particularly of the Poor, againſt them, at the time when we began to make uſe of them in the public kitchen of the Houſe of Induſtry in

* The quantity of fuel here mentioned, though it certainly is almoſt incredibly ſmall, was nevertheleſs determined from the reſults of actual experiments. A particular account of theſe experiments will be given in my Eſſay on the Management of Heat and the Economy of Fuel.

Munich,

Munich, that we were abſolutely obliged, at firſt, to introduce them by ſtealth.—A private room in a retired corner was fitted up as a kitchen for cooking them; and it was neceſſary to diſguiſe them, by boiling them down entirely, and deſtroying their form and texture, to prevent their being detected:—but the Poor ſoon found that their ſoup was improved in its qualities; and they teſtified their approbation of the change that had been made in it ſo generally and loudly, that it was at laſt thought to be no longer neceſſary to conceal from them the ſecret of its compoſition, and they are now grown ſo fond of potatoes that they would not eaſily be ſatisfied without them.

The employing of potatoes as an ingredient in the ſoup has enabled us to make a conſiderable ſaving in the other more coſtly materials, as may be ſeen by comparing the following receipt with that already given.

SOUP, N° II.

Ingredients.	Weight Avoirdupois lb.	oz.		Coſt in ſterling money. £.	s.	d.
2 *viertls* of pearl barley -	70	9	——	0	5	$9\frac{13}{14}$
2 *viertls* of peas - -	65	10	——	0	3	$7\frac{5}{7}$
8 *viertls* of potatoes - -	230	4	——	0	1	$9\frac{9}{11}$
Cuttings of bread - -	69	10	——	0	10	$2\frac{11}{14}$
Salt - - -	19	13	——	0	1	$2\frac{1}{2}$
Vinegar - - -	46	13	——	0	1	$5\frac{1}{2}$
Water - - -	982	15				
Total Weight	1485	10				
Expences for *fuel, ſervants*, repairs, &c. as before				0	3	$5\frac{5}{11}$
Total daily expence, when dinner is provided for 1200 perſons - - - - -				1	7	$6\frac{5}{7}$

This ſum (1l. 7s. 6¾d.) divided by 1200, the number of portions of ſoup, gives for each portion *one farthing* very nearly; or accurately, $1\frac{1}{40}$ farthing.

The quantity of each of the ingredients contained in one portion of ſoup is as follows:

Ingredients.	In Avoirdupois weight. *Soup*, N° I.	*Soup*, N° II.
	oz.	oz.
Of pearl barley	$1\frac{1258}{1200}$	$0\frac{1120}{1200}$
Of Peas	$1\frac{960}{1200}$	$0\frac{1080}{1200}$
Of potatoes		$3\frac{84}{1200}$
Of bread	$0\frac{1114}{1200}$	$0\frac{1114}{1200}$
Total ſolids	$4\frac{772}{1200}$	$5\frac{977}{1200}$
Of Salt	$0\frac{316}{1200}$	$0\frac{316}{1200}$
Of weak vinegar	$0\frac{748}{1200}$	$0\frac{748}{1200}$
Of water	$14\frac{4112}{1200}$	$13\frac{127}{1200}$
Total	$19\frac{968}{1200}$	$19\frac{968}{1200}$

The expence of preparing theſe ſoups will vary with the prices of the articles of which they are compoſed: but as the quantities of the ingredients, determined by weight, are here given, it will be eaſy to aſcertain exactly what they will coſt in any caſe whatever.

Suppoſe, for inſtance, it were required to determine how much 1200 portions of the Soup, No. I. would coſt in London at this preſent moment, (the 12th of November 1795,) when all kinds of proviſions are uncommonly dear. I ſee by a printed report of the Board of Agriculture, of the day before yeſterday (November 10), that the prices of the articles neceſſary for preparing theſe ſoups were as follows:

Barley, per buſhel, weighing 46lb. at 5s. 6d. which gives for each pound about 1¼d.; but prepared

pared as pearl barley, it will coſt at leaſt two pence per pound *.

Boiling peas, per buſhel, weighing 61¾lb. (at 10s.) which gives for each pound nearly 1¼d.

Potatoes, per buſhel, weighing 58½lb. at 2s. 6d. which gives nearly one halfpenny for each pound.

And I find that a quartern loaf of wheaten *bread*, weighing 4lb. 5oz. coſts now in London 1s. 0½d.;—this bread muſt therefore be reckoned at 11$\frac{25}{69}$ farthings *per* pound.

Salt coſts 1½d. *per* pound; and vinegar (which is probably ſix times as ſtrong as that ſtuff called vinegar which is uſed in the kitchen of the Houſe of Induſtry at Munich) coſts 1s. 8d. *per* gallon.

This being premiſed, the computations may be made as follows:

Expence of preparing in London, in the month of November 1795, 1200 portions of the SOUP, No. I.

lb.	oz.			s.	d.		£.	s.	d.
141	2	pearl barley,	at	0	2	*per lb.*	1	12	6
131	4	peas, at	—	0	1½	——	0	16	4
69	10	wheaten bread, at		0	11$\frac{25}{69}$	——	0	16	6
19	13	ſalt, at	—	0	1½	——	0	2	5½
Vinegar, one gallon at			—	1	8	——	0	1	8
Expences for *fuel*, *ſervants*, *kitchen furniture*, &c. reckoning three times as much as thoſe articles of expence amount to daily at Munich							0	10	4½
						Total	3	9	9½

* One Bavarian ſchäfl (equal to 6$\frac{31}{100}$ Wincheſter buſhels) of barley weighing at a medium 250 Bavarian pounds, upon being pearled, or *rolled* (as it is called in Germany), is reduced to half a ſchäfl, which weighs 171 Bavarian pounds. The 79lb. which it loſes in the operation is the perquiſite of the miller, and is all he receives for his trouble.

Which

Which ſum (3l. 9s. 9¾d.) divided by 1200, the number of portions of ſoup, gives $2\frac{951}{1200}$ farthings, or nearly 2¾ farthings for each portion.

For the SOUP, No. II. it will be,

lb.	oz.			s.	d.		£.	s.	d.
70	9	pearl barley,	at	0	2	——	0	11	9
65	10	peas, at	—	0	1½	——	0	8	2
230	4	potatoes, at	—	0	0½	——	0	13	9
69	10	bread, at	—	0	$1\frac{21}{65}$	——	0	16	6
19	13	ſalt, at	—	0	1½	——	0	2	5½
Vinegar, one gallon			—			——	0	1	8
Expences for fuel, ſervants, &c.						——	0	10	4¼
						Total	3	4	7¾

This ſum (3l. 4s. 7¾d.) divided by 1200, the number of portions, gives for each 2½ farthings very nearly.

This ſoup comes much higher here in London, than it would do in moſt other parts of Great Britain, on account of the very high price of potatoes in this city; but in moſt parts of the kingdom, and certainly in every part of Ireland, it may be furniſhed, even at this preſent moment, notwithſtanding the uncommonly high prices of proviſions, at leſs than *one halfpenny* the portion of 20 ounces.

Though the object moſt attended to in compoſing theſe ſoups was to render them wholeſome and nouriſhing, yet they are very far from being unpalatable.—The baſis of the ſoups, which is water prepared and thickened by barley, is well calculated to receive, and to convey to the palate in an

an agreeable manner, every thing that is ſavoury in the other ingredients; and the dry bread rendering maſtication neceſſary, prolongs the action of the Food upon the organs of taſte, and by that means increaſes and *prolongs* the enjoyment of eating.

But though theſe ſoups are very good and nouriſhing, yet they certainly are capable of a variety of improvements. The moſt obvious means of improving them is to mix with them a ſmall quantity of ſalted meat, boiled, and cut into very ſmall pieces, (the ſmaller the better,) and to fry the bread that is put into them in butter, or in the fat of ſalted pork or bacon.

The bread, by being fried, is not only rendered much harder, but being impregnated with a fat or oily ſubſtance it remains hard after it is put into the ſoup, the water not being able to penetrate it and ſoften it.

All good cooks put fried bread, cut into ſmall ſquare pieces, in peas-ſoup; but I much doubt whether they are aware of the very great importance of that practice, or that they have any juſt idea of the *manner* in which the bread improves the ſoup.

The beſt kind of meat for mixing with theſe ſoups is ſalted pork, or bacon, or ſmoked beef.

Whatever meat is uſed, it ought to be boiled either in clear water or in the ſoup; and after it is boiled it ought to be cut into very ſmall pieces, as ſmall, perhaps, as barley-corns.—The bread may be cut in pieces of the ſize of large peas, or

in

in thin ſlices; and after it is fried, it may be mixed with the meat and put into the ſoup-diſhes, and the ſoup poured on them when it is ſerved out.

Another method of improving this ſoup is to mix with it ſmall dumplins, or meat-balls, made of bread, flour, and ſmoked beef, ham, or any other kind of ſalted meat, or of liver cut into ſmall pieces, or rather *minced*, as it is called.—Theſe dumplins may be boiled either in the ſoup or in clear water, and put into the ſoup when it is ſerved out.

As the meat in theſe compoſitions is deſigned rather to pleaſe the palate than for any thing elſe, the ſoup being ſufficiently nouriſhing without it, it is of much importance that it be reduced to very ſmall pieces, in order that it be brought into contact with the organs of taſte by a large ſurface; and that it be mixed with ſome hard ſubſtance, (fried bread, for inſtance, crumbs, or hard dumplins,) which will neceſſarily prolong the time employed in maſtication.

When this is done, and where the meat employed has much flavour, a very ſmall quantity of it will be found ſufficient to anſwer the purpoſe required.

One ounce of bacon, or of ſmoked beef, and *one ounce* of fried bread, added to *eighteen ounces* of the Soup No. I. would afford an excellent meal, in which the taſte of animal food would decidedly predominate.

Dried ſalt fiſh, or ſmoked fiſh, boiled and then minced, and made into dumplins with maſhed potatoes,

tatoes, bread, and flour, and boiled again, would be very good, eaten with either of the ſoups No. I. or No. II.

Theſe ſoups may likewiſe be greatly improved, by mixing with them various kinds of cheap roots and green vegetables, as turnips, carrots, parſnips, celery, cabbages, ſour-crout, &c.; as alſo by ſeaſoning them with fine herbs and black pepper.—*Onions* and *leeks* may likewiſe be uſed with great advantage, as they not only ſerve to render the Food in which they enter as ingredients peculiarly ſavoury, but are really very wholeſome. Where they can be had cheap, they never ſhould be omitted.

With regard to the *barley* made uſe of in preparing theſe ſoups, though I always have uſed pearl barley, or *rolled* barley (as it is called in Germany), yet I have no doubt but common barley-meal would anſwer nearly as well; particularly if care were taken to boil it gently for a ſufficient length of time over a ſlow fire before the peas are added *.

Till the laſt year we uſed to cook the barley-ſoup, and the peas-ſoup ſeparate, and not to mix them till the moment when they were poured into the tubs upon the cut bread, in order to be carried

* Since the firſt Edition of this Eſſay was publiſhed the experiment with barley-meal has been tried, and the meal has been found to anſwer quite as well as pearl-barley, if not better, for making theſe ſoups. Among others, Thomas Bernard, Eſq. Treaſurer of the Foundling Hoſpital, a gentleman of moſt reſpectable character, and well known for his philanthropy and active zeal in relieving the diſtreſſes of the Poor, has given it a very complete and fair trial; and he found, what is very remarkable, though not difficult to be accounted for—that the barley-meal, *with all the bran in it*, anſwered better, that is to ſay, made the ſoup richer, and thicker, than when the fine flour of barley, without the bran, was uſed.

into the dining hall; but I do not know that any advantages were derived from that practice; the ſoup being, to all appearance, quite as good ſince the barley and the peas have been cooked together as before.

As ſoon as the ſoup is done, and the boilers are emptied, they are immediately refilled with water, and the barley for the ſoup for the next day is put into it, and left to ſteep over-night; and at ſix o'clock the next morning the fires are lighted under the boilers *.

The peas, however, are never ſuffered to remain in the water over-night; as we have found, by repeated trials, that they never boil ſoft if the water in which they are boiled is not boiling hot when they are put into it.—Whether this is peculiar to the peas which grow in Bavaria, I know not.

When I began to feed the Poor of Munich, there was alſo a quantity of *meat* boiled in their ſoup; but as the quantity was ſmall, and the quality of it but very indifferent, I never thought it contributed much to rendering the victuals more nouriſhing: but as ſoon as means were found for rendering the ſoup palatable without meat, the

* By ſome experiments lately made, it has been found that the ſoup will be much improved if a ſmall fire is made under the boiler, juſt ſufficient to make its contents boil up once, when the barley and water are put into it, and then cloſing up immediately the regiſter in the aſh-pit door, and the damper in the chimney, and throwing a thick blanket, or a warm coverlid over the cover of the boiler, the whole be kept hot till the next morning. This heat ſo long continued, acts very powerfully on the barley, and cauſes it to thicken the water in a very ſurpriſing manner. Perhaps the *oat-meal* uſed for making water-gruel might be improved in its effects by the ſame means. The experiment is certainly worth trying.

quantity

quantity of it uſed was gradually diminiſhed, and it was at length entirely omitted. I never heard that the Poor complained of the want of it; and much doubt whether they took notice of it.

The management of the fire in cooking is, in all caſes, a matter of great importance; but in no caſe is it ſo neceſſary to be attended to as in preparing the cheap and nutritive ſoups here recommended.—Not only the *palatableneſs*, but even the *ſtrength* or *richneſs* of the ſoup, ſeems to depend very much upon the management of the heat employed in cooking it.

From the beginning of the proceſs to the end of it, the boiling ſhould be as gentle as poſſible;—and if it were poſſible to keep the ſoup always *juſt boiling hot* without actually boiling, it would be ſo much the better.

Cauſing any thing to boil violently in any culinary proceſs is very ill judged; for it not only does not expedite, even in the ſmalleſt degree, the proceſs of cooking, but it occaſions a moſt enormous waſte of fuel; and by driving away with the ſteam many of the more volatile and more ſavoury particles of the ingredients, renders the victuals leſs good and leſs palatable.—To thoſe who are acquainted with the experimental philoſophy of heat, and who know that water once brought to be *boiling hot*, however gently it may boil in fact, *cannot be made any hotter*, however large and intenſe the fire under it may be made, and who know that it is by the *heat*—that is to ſay, *the degree* or intenſity of it, and the *time* of its being continued, and not by the bubbling up,

or

or *boiling* (as it is called,) of the water that culinary operations are performed—this will be evident, and thoſe who know that more than *five times* as much heat is required to boil any, or to *ſend off in ſteam* any given quantity of water *already boiling hot* as would be neceſſary to heat the ſame quantity of *ice-cold* water *to the boiling point*—will ſee the enormous waſte of heat, and conſequently of fuel, which, in all caſes, muſt reſult from violent boiling in culinary proceſſes.

To prevent the ſoup from burning to the boiler, the bottom of the boiler ſhould be made *double*; the falſe bottom (which may be very thin) being fixed on the inſide of the boiler, the two ſheets of copper or of iron, when the boiler is made of that metal, being every where in contact with each other; but they ought not to be attached to each other with ſolder, except only at the edge of the falſe bottom where it is joined to the ſides of the boiler. —The falſe bottom ſhould have a rim about an inch and an half wide, projecting upwards, by which it ſhould be riveted to the ſides of the boiler; but only a few rivets, or nails, ſhould be uſed for fixing the two bottoms together below, and thoſe uſed ſhould be very ſmall; otherwiſe, where large nails are employed at the bottom of the boiler, where the fire is moſt intenſe, the ſoup will be apt to *burn-to*; at leaſt on the heads of thoſe large nails *.

* Perhaps a thin plate of caſt iron full of holes, placed under the bottom of a boiler, at the diſtance of about ¼ of an inch from it, might anſwer the purpoſe of a double bottom.

The

The two ſheets of metal may be made to touch each other every where, by hammering them together after the falſe bottom is fixed in its place; and they may be tacked together by a few ſmall rivets placed here and there, at conſiderable diſtances from each other; and after this is done, the boiler may be tinned.

In tinning the boiler, if proper care be taken, the edge of the falſe bottom may be ſoldered by the tin to the ſides of the boiler, and this will prevent the water or other liquids put into the boiler from getting between the two bottoms.

In this manner double bottoms may be made to ſauce-pans and kettles of all kinds uſed in cooking; and this contrivance will, in all caſes, moſt effectually prevent what is called by the cooks *burning to**.

* This invention of double bottoms might be uſed with great ſucceſs by diſtillers, to prevent their liquor, when it is thick, from burning to the bottoms of their ſtills. But there is another hint, which I have long wiſhed to give diſtillers, from which, I am perſuaded, they might derive very eſſential advantages.—It is to recommend to them to make up warm clothing of thick blanketting for covering up their ſtill-heads, and defending them from the cold air of the atmoſphere; and for covering in the ſame manner all that part of the copper or boiler which riſes above the brick-work in which it is fixed. The great quantity of heat which is conſtantly given off to the cold air of the atmoſphere in contact with it by this naked copper, not only occaſions a very great loſs of heat, and of fuel, but tends likewiſe very much to *embarraſs* and to *prolong* the proceſs of diſtillation; for all the heat communicated by the naked ſtill-head to the atmoſphere is taken from the ſpirituous vapour which riſes from the liquor in the ſtill; and as this vapour cannot fail to be condenſed into ſpirits whenever and *wherever* it loſes *any part* of its heat,—as the ſpirits generated in the ſtill-head in conſequence of this communication of heat to the atmoſphere do not find their way into the worm, but trickle down and mix again with the liquor in the ſtill,—the bad effects of leaving the ſtill-head expoſed naked to the cold air are quite evident. The remedy for this evil is as cheap and as effectual as it is ſimple and obvious.

The Heat is ſo much obſtructed in its paſſage through the thin ſheet of air, which, notwithſtanding all the care that is taken to bring the two bottoms into actual contact, will ſtill remain between them, the ſecond has time to give its heat as faſt as it receives it, to the Fluid in the boiler; and conſequently never acquires a degree of Heat ſufficient for burning any thing that may be upon it.

But I muſt not enlarge here upon a ſubject I ſhall have occaſion to treat more fully in another place.—To return, therefore, to the ſubject more immediately under conſideration—Food.

CHAP. IV.

Of the ſmall Expence at which the Bavarian Soldiers are fed.—Details of their Houſekeeping, founded on actual Experiment.—An Account of the Fuel expended by them in Cooking.

IT has often been matter of ſurpriſe to many, and even to thoſe who are moſt converſant in military affairs, that ſoldiers can find means to live upon the very ſmall allowances granted them for their ſubſiſtence; and I have often wondered that nobody has undertaken to inveſtigate that matter, and to explain a myſtery at the ſame time curious and intereſting in a high degree.

The pay of a private ſoldier is in all countries very ſmall, much leſs than the wages of a day-labourer; and in ſome countries it is ſo mere a pittance, that it is quite aſtoniſhing how it can be made to ſupport life.

The pay of a private foot-ſoldier in the ſervice of His Moſt Serene Highneſs the Elector Palatine, (and it is the ſame for a private grenadier in the regiment of guards,) is *five creutzers* a-day, and no more.—Formerly the pay of a private foot-ſoldier was only four creutzers and a half a-day, but lately, upon the introduction of the new military arrangements in the country, his pay has been raiſed to five creutzers;—and with this he receives

one pound thirteen ounces and a half, Avoirdupois weight, of rye-bread, which, at the medium price of grain in Bavaria and the Palatinate, coſts ſomething leſs than three creutzers, or juſt about *one penny* ſterling.

The pay which the ſoldier receives in money,—(five creutzers a-day,) equal to one penny three farthings ſterling, added to his daily allowance of bread, valued at one penny, make *two pence three farthings* a-day, for the ſum total of his allowance.

That it is poſſible, in any country, to procure Food ſufficient to ſupport life with ſo ſmall a ſum, will doubtleſs appear extraordinary to an Engliſh reader;—but what would be his ſurpriſe upon ſeeing a whole army, compoſed of the fineſt, ſtouteſt, and ſtrongeſt men in the world, who are fed upon that allowance, and whoſe countenances ſhow the moſt evident marks of ruddy health, and perfect contentment.

I have already obſerved, how much I was ſtruck with the domeſtic economy of the Bavarian ſoldiers. I think the ſubject much too intereſting, not to be laid before the Public, even in all its details; and as I am of opinion that it will be more ſatisfactory to hear from their own mouths an account of the manner in which theſe ſoldiers live, I ſhall tranſcribe the reports of two ſenſible non-commiſſioned officers, whom I employed to give me the information I wanted.

Theſe non-commiſſioned officers, who belong to two different regiments of grenadiers in garriſon at Munich, were recommended to me by their colonels

colonels as being very ſteady, careful men, are each at the head of a meſs conſiſting of twelve ſoldiers, themſelves reckoned in the number. The following accounts, which they gave me of their houſekeeping, and of the expences of their tables, were all the genuine reſults of actual Experiments made at my particular deſire, and at my coſt.

I do not believe that uſeful information was ever purchaſed cheaper than upon this occaſion; and I fancy my reader will be of the ſame opinion when he has peruſed the following reports, which are literally tranſlated from the original German.

"In obedience to the orders of Lieut. General "Count Rumford, the following Experiments "were made by Serjeant Wickenhof's meſs, in the "firſt company of the firſt (or Elector's own) re-"giment of grenadiers, at Munich, on the 10th "and 11th of June 1795.

"June 10th, 1795.

"*Bill of Fare.*

"Boiled beef, with ſoup and bread dumplins.

"Details of the expence, &c.

"*For the boiled beef and the ſoup.*

lb.	loths.		Creutzers.
2	0	beef * — —	16
0	1	ſweet herbs — —	1
0	0½	pepper — —	0½
0	6	ſalt — — —	0½
1	14½	ammunition bread, cut fine —	2⅞
9	20	water — —	0
Total 13	10		Coſt 20⅞

* The Bavarian pound (equal to $1\frac{238}{1000}$, or near one pound and a quarter Avoirdupois) is divided into 32 loths.

" All theſe articles were put together into an " earthen pot, and boiled two hours and a quar- " ter. The meat was then taken out of the ſoup " and weighed, and found to weigh 1 lb. 30 loths; " which, divided into twelve equal portions, gave " *five loths* for the weight of each.

" The ſoup, with the bread, &c. weighed 9 lb. " 30½ loths; which, divided into twelve equal " portions, gave for each 26$\frac{7}{12}$ loths.

" The coſt of the meat and ſoup together, " 20$\frac{7}{8}$ creutzers, divided by twelve, gives 1$\frac{3}{4}$ creut- " zers, very nearly, for the coſt of each portion.

" *For the bread dumplins.*

lb.	loths.		Creutzers.
1	13	of fine ſemel bread —	10
1	0	of fine flour — —	4½
0	6	ſalt — — —	0½
3	0	of water — —	0
Total 5	19	Coſt	15

" This maſs was made into dumplins, and theſe " dumplins were boiled half an hour in clear wa- " ter. Upon taking them out of the water, they " were found to weigh 5 lb. 24 loths; and divid- " ing them into twelve equal portions, each por- " tion weighed 15$\frac{1}{3}$ loths; and the coſt of the " whole (15 creutzers), divided by twelve, gives " 1$\frac{1}{4}$ creutzers for the coſt of each portion.

" The meat, ſoup, and dumplins were ſerved " all at once in the ſame diſh, and were all eaten " together; and with this meal, (which was their

" dinner,

" dinner, and was eaten at twelve o'clock,) each " perſon belonging to the meſs was furniſhed with " a piece of rye-bread, weighing ten loths, and " which coſt $\frac{5}{16}$ of a creutzer.—Each perſon was " likewiſe furniſhed with a piece of this bread, " weighing ten loths, for his breakfaſt;—another " piece, of equal weight, in the afternoon at four " o'clock; and another in the evening."

Analyſis of this Day's Fare.

Each perſon received in the courſe of the day.					Amount of coſt in Bavarian money.
	In ſolids.		In fluids.		
	lb.	loths.	lb.	loths.	Creutzers.
Boiled beef	0	5			$1\frac{1}{8}$
In the ſoup. Rye-bread	0	$3\frac{7}{8}$			
In the ſoup. Sweet herbs	0	$0\frac{1}{12}$			
In the ſoup. Salt	0	$0\frac{1}{24}$			
In the ſoup. Pepper	0	$0\frac{1}{24}$			$0\frac{7}{16}$
In the ſoup. Water			0	$23\frac{1}{2}$	
In the ſoup. Total	0	$9\frac{2}{24}$	0	$23\frac{1}{2}$	
In dumplins. Wheaten bread	0	$3\frac{3}{4}$			
In dumplins. Ditto flour	0	$2\frac{2}{3}$			
In dumplins. Salt	0	$0\frac{1}{24}$			
In dumplins. Water			0	$7\frac{1}{12}$	$1\frac{1}{4}$
In dumplins. Total	0	$6\frac{11}{24}$	0	$7\frac{1}{12}$	
Dry bread. For breakfaſt	0	10			
Dry bread. At dinner	0	10			
Dry bread. In the afternoon	0	10			
Dry bread. At ſupper	0	10			$2\frac{1}{2}$
Dry bread. Total	1	8			
General Total	1	$23\frac{11}{24}$	0	$31\frac{1}{12}$	which coſt $5\frac{17}{48}$

The ammunition bread is reckoned in this eſtimate at two creutzers the Bavarian pound, which is about what it coſts at a medium; and as the daily allowance of the ſoldiers is $1\frac{1}{2}$ Bavarian pounds of this bread, this reckoned in money amounts to three *creutzers a-day*; and this added to his pay at *five creutzers a-day* makes *eight creutzers a-day*, which is the whole of his allowance from the ſovereign for his ſubſiſtence.

But it appears from the foregoing account, that he expends for Food no more than $5\frac{17}{48}$ creutzers a-day, there is therefore a ſurplus amounting to $2\frac{31}{48}$ creutzers a-day, or very near *one third of his whole allowance*, which remains; and which he can diſpoſe of juſt as he thinks proper.

This ſurplus is commonly employed in purchaſing beer, brandy, tobacco, &c. Beer in Bavaria coſts two creutzers a pint; brandy, or rather malt-ſpirits, from fifteen to eighteen creutzers; and tobacco is very cheap.

To enable the Engliſh reader to form, without the trouble of computation, a complete and ſatisfactory idea of the manner in which theſe Bavarian ſoldiers are fed, I have added the following Analyſis of their fare; in which the quantity of each article is expreſſed in *Avoirdupois weight*, and its coſt in *Engliſh money*.

Analyſis.

Analyſis.

Each perſon belonging to the meſs received in the courſe of the day June 11th, 1795,	lb.	oz.	Coſt in Engliſh money. s.	d.
Dry ammunition bread -	1	$8\frac{76}{100}$	0	$0\frac{12}{14}$
Ammunition bread cooked in the ſoup - -	0	$2\frac{4}{10}$	0	$0\frac{27}{264}$
Fine wheaten (*ſemel*) bread in the dumplins -	0	$2\frac{3}{10}$	0	$0\frac{19}{352}$
Total bread	1	$13\frac{46}{100}$		
Fine flour in the dumplins	0	$1\frac{65}{100}$	0	$0\frac{18}{33}$
Boiled beef - - -	0	$3\frac{1}{10}$	0	$0\frac{72}{198}$
In ſeaſoning; fine herbs, ſalt, and pepper - -	0	$0\frac{17}{100}$	0	$0\frac{2}{33}$
Total ſolids	2	$2\frac{34}{100}$		
Water prepared by cooking.				
In the ſoup - -	0	$14\frac{52}{209}$		
In the dumplins -	0	$4\frac{32}{100}$		
Total prepared water	1	$2\frac{84}{100}$		
Total ſolids and fluids	3	$5\frac{18}{100}$		

Total expence for each perſon $5\frac{17}{48}$ creutzers, equal to *two pence* ſterling, very nearly.

But as the Bavarian ſoldiers have not the ſame fare every day, the expences of their tables cannot be aſcertained from one ſingle experiment. I ſhall therefore return to Serjeant Wickenhof's report.

"11th

" 11th of June 1795.

" *Bill of Fare.*

" Bread-dumplins, and ſoup.

" Details of expences, &c.

" *For the dumplins.*

lb.	loths.				Creutzers.
2	13	wheaten bread		—	14
0	16	butter	—	—	9
1	0	fine flour	—	—	$4\frac{1}{2}$
0	11	eggs	—	—	3
0	6	ſalt	—	—	$0\frac{1}{2}$
0	$0\frac{1}{2}$	pepper	—	—	$0\frac{1}{2}$
3	16	water	—	—	—
7	$30\frac{1}{2}$			Coſt	$31\frac{1}{2}$ creutzers.

" This made into dumplins;—the dumplins, " after being boiled, were found to weigh eight " pounds eight loths, which, divided among twelve " perſons, gave for each twenty-two loths.—And " the coſt of the whole ($31\frac{1}{2}$ creutzers), divided " by 12, gives $2\frac{1}{2}\frac{5}{4}$ creutzers for each portion.

" *For the ſoup.*

lb.	loths.				Creutzers.
1	$14\frac{1}{2}$	ammunition bread		—	$2\frac{7}{8}$
0	6	ſalt	—	—	$0\frac{1}{2}$
0	1	ſweet herbs	—	—	1
12	0	water	—	—	—
13	$21\frac{1}{2}$			Coſt	$4\frac{3}{8}$ creutzers.

" This ſoup, when cooked, weighed 11 lb. 26 " loths; which, divided among the twelve per- " ſons belonging to the meſs, gave for each

" $31\frac{1}{2}$ loths; and the coſt ($4\frac{3}{8}$ creutzers), divided " by twelve, gives nearly *three ninths* of a creutzer " for each portion.

" *For bread.*

" Four pieces of ammunition bread, weighing " each ten loths, for each perſon,—namely, one " piece for breakfaſt—one at dinner—one in the " afternoon,—and one at ſupper; in all, 40 loths, " or one pound and a quarter, coſts two creutzers " and a half."

Details of expences, &c. for each perſon.

	lb.	loths.			Creutzers.
For	1	8	dry bread	—	$2\frac{1}{2}$
For	0	22	bread-dumplins	—	$2\frac{15}{24}$
For	0	$31\frac{1}{2}$	bread ſoup	—	$0\frac{3}{8}$
	2	$30\frac{1}{2}$	of Food	Coſt	$5\frac{1}{2}$ creutzers.

The ſame details expreſſed in Avoirdupois weight, and Engliſh money:

For each perſon lb.	oz.			Pence.
1	$8\frac{76}{100}$	dry ammunition bread	—	$0\frac{10}{11}$
0	$13\frac{6}{16}$	bread-dumplins	—	$0\frac{69}{792}$
1	$3\frac{1}{2}$	bread ſoup —	—	$0\frac{36}{64}$
3	$9\frac{86}{100}$	of Food	— Coſt	2 pence.

" June

" June 20th, 1795.

" Serjeant Kein's meſs, ſecond regiment of grenadiers.

" *Bill of Fare.*

" Boiled beef—bread ſoup—and liver dumplins.

" Details of expences, &c.

" *For the boiled beef and ſoup.*"

lb.	loths.				Creutzers.
2	0	beef	—	—	15
0	6½	ſalt	—	—	0½
0	0½	pepper	—	—	0½
0	2	ſweet herbs	—	—	0½
2	24	ammunition bread		—	3¼
17	0	water	—	—	—
22	1			Coſt	19½ creutzers.

" Theſe ingredients were all boiled together " two hours and five minutes; after which the " beef was taken out of the ſoup and weighed, " and was found to weigh 1 lb. 22 loths; the " ſoup weighed 15 lb.; and theſe divided equally " among the twelve perſons belonging to the meſs, " gave for each portion 4½ loths of beef, and 1 lb. " 8 loths of ſoup; and the coſt of the whole (19¾ " creutzers), divided by 18, gives 1 1/48 creutzers " for the coſt of each portion.

" Details

" Details of expences, &c. for the *liver dumplins.*

lb.	loths.			Creutzers.
2	28	of fine *semel* bread	—	15
1	0	of beef liver	—	5
0	18	of fine flour	—	$2\frac{1}{2}$
0	6	of salt —	—	$0\frac{1}{2}$
2	24	of water —	—	—
Total 7	12		Coſt	23 creutzers.

" Theſe ingredients being made into dumplins, " the dumplins after being properly boiled were " found to weigh 8 lb.—This gave for each por- " tion $21\frac{1}{3}$ loths; and the amount of the coſt " (23 creutzers), divided by 12, the number of " the portions, gives for each $1\frac{11}{12}$ creutzers.

" The quantity of dry ammunition bread fur- " niſhed to each perſon was 1 lb. 8 loths; and " this, at two creutzers a pound, amounts to $2\frac{1}{8}$ " creutzers."

Recapitulation.

For each perſon

lb.	loths.		Creutzers.
0	$4\frac{1}{2}$	of boiled beef, and	— $1\frac{11}{48}$
1	8	of bread ſoup	
0	$21\frac{1}{3}$	of liver dumplins	— $1\frac{11}{12}$
1	8	of dry bread	— $2\frac{1}{2}$
3	$9\frac{5}{8}$	of Food	Coſt $6\frac{1}{8}$ creutzers.

In *Avoirdupois weight*, and *Engliſh money*, it is,—for each perſon:

lb.	oz.		Pence.
0	$2\frac{3}{10}$	of boiled beef, and	— $0\frac{948}{1584}$
1	$8\frac{9}{10}$	of bread ſoup	
0	$13\frac{19}{100}$	of liver dumplins	— $0\frac{276}{300}$
1	$8\frac{76}{100}$	of dry bread	— $0\frac{40}{11}$
4	$1\frac{54}{100}$	of Food	Coſt $2\frac{1}{5}$ pence.

" June

" June 21ſt, 1795.

" *Bill of Fare.*

" Boiled beef, and bread ſoup, with bread
" dumplins.

" Details of expences, &c. for the *boiled beef*
" and *bread ſoup.*

" The ſame as yeſterday.

" For the *dumplins.*

lb.	loths.			Creutzers.
2	30	ſemel bread	—	$15\frac{1}{2}$
0	18	fine flour	—	3
0	6	ſalt —	—	$0\frac{2}{2}$
3	0	water —	—	—
6	22		Coſt	19 creutzers.

" Theſe dumplins being boiled, were found to
" weigh 7 lb. which gave for each perſon $18\frac{2}{3}$ loths;
" and each portion coſt $1\frac{7}{12}$ creutzers.

" Dry ammunition bread furniſhed to each per-
" ſon 1 lb. 8 loths, which coſt $2\frac{1}{2}$ creutzers.

Recapitulation.

" Each perſon belonging to the meſs received
" this day:

lb.	loths.			Creutzers.
0	$4\frac{1}{2}$	of boiled beef, and	—	$1\frac{11}{48}$
1	8	of bread ſoup		
0	$18\frac{2}{3}$	of bread dumplins	—	$1\frac{7}{12}$
1	8	of dry bread	—	$2\frac{1}{2}$
3	$7\frac{1}{6}$	of Food	Coſt	$5\frac{35}{48}$ creutzers.

" In

" In *Avoirdupois weight*, and *Engliſh money*, it is,

lb.	oz.			Pence.
0	$2\frac{78}{100}$	of boiled beef, and	}	$0\frac{948}{1534}$
1	$8\frac{70}{100}$	of bread ſoup	}	
0	$11\frac{54}{100}$	of bread dumplins		$0\frac{228}{306}$
1	$8\frac{76}{100}$	of dry bread	—	$0\frac{10}{11}$
4	0	of Food	Coſt	$2\frac{1}{12}$ pence.

" June 22d, 1795.

" *Bill of Fare.*

" *Bread ſoup* and *meat dumplins.*

" Details of expences, &c.

lb.	loths.			Creutzers.
2	0	of beef	—	15
2	30	of ſemel bread	—	$15\frac{1}{2}$
0	18	of fine flour	—	3
0	1	of pepper	—	1
0	12	of ſalt	—	1
0	2	of ſweet herbs	—	$0\frac{1}{2}$
2	24	of ammunition bread		$3\frac{1}{4}$
2	16	of water to the dumplins		

Coſt $39\frac{1}{4}$ creutzers.

" The meat being cut fine, or minced, was " mixed with the ſemel or wheaten bread; and " theſe with the flour, and a due proportion of " ſalt, were made into dumplins, and boiled in the " ſoup.—Theſe dumplins, when boiled, weighed " 10 lb. which, divided into 12 equal portions, " gave $20\frac{1}{3}$ loths for each.

" The ſoup weighed 15 lb. which gave 1 lb. " 8 loths for each portion.—Of dry ammunition " bread, each perſon received 1 lb. 8 loths, which " coſt $2\frac{1}{2}$ creutzers.

Recapi-

Recapitulation.

" Each perſon received this day.

lb.	loths.		Creutzers.
0	$20\frac{1}{3}$ of meat dumplins, and	}	$3\frac{13}{41}$
1	8 of bread ſoup		
1	8 of ammunition bread		$2\frac{1}{2}$
3	$4\frac{1}{3}$ of Food	Coſt	$5\frac{37}{41}$ creutzers.

" In *Avoirdupois weight*, and *Engliſh money*, it is,

lb.	oz.		Pence.
0	$12\frac{77}{100}$ of meat dumplins, and	}	$1\frac{300}{1584}$
1	$8\frac{76}{100}$ of bread ſoup		
1	$8\frac{76}{100}$ of ammunition bread		$0\frac{10}{11}$
3	$14\frac{229}{100}$ of Food	Coſt	$2\frac{1}{10}$ pence.

The reſults of all theſe Experiments, (and of many more which I could add,) ſhow that the Bavarian ſoldier can live,—and the fact is that he actually does live,—upon a little more than *two-thirds* of his allowance.—Of the *five creutzers* a-day which he receives in money, he ſeldom puts more than *two creutzers and an half*, and never more than *three creutzers* into the meſs; ſo that at leaſt *two fifths* of his pay remains, after he has defrayed all the expences of his ſubſiſtence; and as he is furniſhed with every article of his clothing by the ſovereign, and no ſtoppage is ever permitted to be made of any part of his pay, on any pretence whatever, *there is no ſoldier in Europe whoſe ſituation is more comfortable.*

Though

Though the ammunition bread with which he is furniſhed is rather coarſe and brown, being made of rye-meal, with only a ſmall quantity of the coarſer part of the bran ſeparated from it, yet it is not only wholeſome, but very nouriſhing; and for making ſoup it is even more palatable than wheaten bread. Moſt of the ſoldiers, however, in the Elector's ſervice, and particularly thoſe belonging to the Bavarian regiments, make a practice of ſelling a great part of their allowance of ammunition bread, and with the money they get for it, buy the beſt wheaten bread that is to be had; and many of them never taſte brown bread but in their ſoup.

The ammunition bread is delivered to the ſoldiers every fourth day, in loaves, each loaf being equal to two rations; and it is a rule generally eſtabliſhed in the meſſes, for each ſoldier to furniſh one loaf for the uſe of the meſs every twelfth day, ſo that he has five-ſixths of his allowance of bread, which remains at his diſpoſal.

The foregoing account of the manner in which the Batavian ſoldiers are fed, will, I think, ſhow moſt clearly the great importance of making ſoldiers live together in meſſes.—It may likewiſe furniſh ſome uſeful hints to thoſe who may be engaged in feeding the Poor; or in providing Food for ſhips' companies, or other bodies of men who are fed in common.

With regard to the expence of fuel in theſe experiments, as the victuals were cooked in earthen

pots, over an open fire, the conſumption of fire-wood was very great.

On the 10th of June, when 9 lb. 30½ loths of ſoup, 1 lb. 28 loths of meat, and 5 lb. 24 loths of bread dumplins, in all 17 lb. 18½ of Food were prepared, and the proceſs of cooking, from the time the fire was lighted till the victuals were done, laſted two hours and forty-five minutes, and twenty-nine pounds, Bavarian weight, of fire-wood were conſumed.

On the 11th of June, when 11 lb. 26 loths of bread ſoup, and 8 lb. 8 loths of bread dumplins, in all 20 lb. 2 loths of Food were prepared, the proceſs of cooking laſted one hour and thirty minutes;—and ſeventeen pounds of wood were conſumed.

On the 20th of June, in Serjeant Kein's meſs, 15 lb. of ſoup, 1 lb. 22 loths of meat, and 8 lb. of liver dumplins, in all 24 lb. 22 loths of Food were prepared, and though the proceſs of cooking laſted two hours and forty-five minutes, only 27½ lb. of fire-wood were conſumed.

On the 21ſt of June, the ſame quantity of ſoup and meat, and 7 lb. of bread dumplins, in all 23 lb. 22 loths of Food were prepared in two hours and thirty minutes, with the conſumption of 18½ lb. of wood.

On the 22d of June, 15 lb. of ſoup, and 10 lb. of meat dumplins, in all 25 lb. of Food, were cooked in two hours and forty-five minutes, and the wood conſumed was 13 lb. 10 loths.

The

The following table will ſhow, in a ſtriking and ſatisfactory manner, the expence of fuel in theſe experiments:

Date of the Experiments.	Time employed in cooking.	Quantity of Food prepared.	Quantity of Wood conſumed.	Quantity of Wood to 1 lb. of Food.
June 1795.	Hours. min.	lb. loths.	lb.	
10th,	2 45	17 18½	29	
11th,	1 30	20 2	17	
20th,	2 45	24 22	17½	
21ſt,	2 30	23 22	18½	
22d,	2 45	25 0	18¼	
Sums 5	12 15	111 0½	100¼	
Means	2 23	22 0⅕	20 1/20	10/11 lb.

The mean quantity of Food prepared daily in five days being 22 lb. very nearly, and the mean quantity of fire-wood conſumed being 20 1/20 lb.; this gives 10/11 lb. of wood for each pound of Food.

But it has been found by actual experiment, made with the utmoſt care, in the new kitchen of the Houſe of Induſtry at Munich, and often repeated, that 600 lb. of Food, (of the Soup No. I. given to the Poor,) may be cooked with the conſumption of only 44 lb. of pine-wood. And hence it appears how very great the waſte of fuel muſt be in all culinary proceſſes, as they are commonly performed; for though the time taking up in cooking the Soup for the Poor is, at a medium, more than *four hours and a half*, while that employed by the ſoldiers in their cooking is

leſs than *two hours and an half;* yet the quantity of fuel conſumed by the latter is near *thirteen times* greater than that employed in the public kitchen of the Houſe of Induſtry.

But I muſt not anticipate here a matter which is to be the ſubject of a ſeparate Eſſay; and which, from its great importance, certainly deſerves to be carefully and thoroughly inveſtigated.

CHAP. V.

Of the great Importance of making Soldiers eat together in regular Meſſes.—The Influence of ſuch economical Arrangements extends even to the moral Character of thoſe who are the Objects of them.—Of the Expence of feeding Soldiers in Meſſes.—Of the ſurpriſing Smallneſs of the Expence of feeding the Poor at Munich.—Specific Propoſals reſpecting the feeding of the Poor in Great Britain, with Calculations of the Expence, at the preſent Prices of Proviſions.

ALL thoſe who have been converſant in military affairs muſt have had frequent opportunities of obſerving the ſtriking difference there is, even in the appearance of the men, between regiments in which meſſes are eſtabliſhed, and Food is regularly provided under the care and inſpection of the officers: and others in which the ſoldiers are left individually to ſhift for themſelves. And the difference which may be obſerved between ſoldiers who live in meſſes, and are regularly fed, and others who are not, is not confined merely to their external appearance: the influence of theſe cauſes extends much farther, and even the *moral character* of the man is affected by them.

Peace of mind, which is as essential to contentment and happiness as it is to virtue, depends much upon order and regularity in the common affairs of life; and in no case are order and method more necessary to happiness, (and consequently to virtue,) than in that, where the preservation of health is connected with the satisfying of hunger; an appetite whose cravings are sometimes as inordinate as they are insatiable.

Peace of mind depends likewise much upon economy, or the means used for preventing pecuniary embarrassments; and the savings to soldiers in providing Food, which arise from housekeeping in messes of ten or twelve persons who live together, is very great indeed.

But great as these savings now are, I think they might be made still more considerable; and I shall give my reasons for this opinion.

Though the Bavarian soldiers live at a very small expence, little more than *two-pence* sterling a-day, yet when I compare this sum, small as it is, with the expence of feeding the Poor in the House of Industry at Munich, which does not amount to more than *two-farthings* a-day, even including the cost of the piece of dry rye-bread, weighing seven ounces Avoirdupois *, which is given them in their hands

* For each 100 lb. Bavarian weight (equal to $123\frac{54}{100}$ lb. Avoirdupois,) of rye-meal, which the baker receives from the magazine, he is obliged to deliver sixty four loaves of bread, each loaf weighing 2 lb. $5\frac{1}{4}$ loths; equal to 2 lb. 10 oz. Avoirdupois; and as each loaf is divided into six portions, this gives seven ounces Avoirdupois for each portion. Hence it appears that 100 lb. of rye-meal give 149 lb.

hands, at dinner, but which they ſeldom eat at dinner, but commonly carry home in their pockets for their ſuppers; when I compare, I ſay, this ſmall ſum, with the daily expence of the ſoldiers for their ſubſiſtence, I find reaſon to conclude, either that the ſoldiers might be fed cheaper, or that the Poor muſt be abſolutely ſtarved upon their allowance. That the latter is not the caſe, the healthy countenances of the Poor, and the air of placid contentment which always accompanies them, as well in the dining-hall as in their working-rooms, affords at the ſame time the moſt intereſting and moſt ſatisfactory proof poſſible.

Were they to go home in the courſe of the day, it might be ſuſpected that they got ſomething at home to eat, in addition to what they receive from the public kitchen of the Eſtabliſhment:—but this they ſeldom or ever do: and they come to the houſe ſo early in the morning, and leave it ſo late at night, that it does not ſeem probable that they could find time to cook any thing at their own lodgings.

Some of them, I know, make a conſtant practice of giving themſelves a treat of a pint of beer at night, after they have finiſhed their work; but I do not believe they have any thing elſe for their

149 lb. of bread; for ſixty-four loaves, at 2 lb. $5\frac{1}{2}$ loths each, weigh 149 lb.—When this bread is reckoned at two creutzers a Bavarian pound, (which is about what it coſts at a medium,) one portion coſts juſt $\frac{10}{16}$ of a creutzer, or $\frac{120}{528}$ of a penny ſterling, which is ſomething leſs than one farthing.

ſuppers, except it be the bread which they carry home from the Houſe of Induſtry.

I muſt confeſs, however, very fairly, that it always appeared to me quite ſurpriſing, and that it is ſtill a myſtery which I do not clearly underſtand, how it is poſſible for theſe poor people to be ſo comfortably fed upon the ſmall allowances which they receive.—The facts, however, are not only certain, but they are notorious. Many perſons of the moſt reſpectable character in this country, (Great Britain,) as well as upon the Continent, who have viſited the Houſe of Induſtry at Munich, can bear witneſs to their authenticity; and they are ſurely not the leſs intereſting for being extraordinary.

It muſt however be remembered, that what formerly coſt *two farthings* in Bavaria, at the mean price of proviſions in that country, coſts *three* farthings at this preſent moment; and would probably coſt *ſix* in London, and in moſt other parts of Great Britain: but ſtill, it will doubtleſs appear almoſt incredible, that a comfortable and nouriſhing meal, ſufficient for ſatisfying the hunger of a ſtrong man, may be furniſhed in London, and at this very moment, when proviſions of all kinds are ſo remarkably dear, at *leſs than three farthings*. The fact, however, is moſt certain, and may eaſily be demonſtrated by making the experiment.

Suppoſing that it ſhould be neceſſary, in feeding the Poor in this country, to furniſh them with three

three meals a-day, even that might be done at a very ſmall expence, were the ſyſtem of feeding them adopted, which is here propoſed. The amount of that expence would be as follows:

	Pence.	Farths.
For breakfaſt, 20 ounces of the Soup No. II. compoſed of pearl barley, peas, potatoes, and fine wheaten bread (See page 210.)	0	2½
For dinner, 20 ounces of the ſame Soup, and 7 ounces of rye-bread — —	1	2
For ſupper, 20 ounces of the ſame Soup —	0	2½
In all 4 lb. 3 oz. of Food*, which would coſt	2	3

Should it be thought neceſſary to give a little meat at dinner, this may beſt be done by mixing it, cut fine, or minced, in bread dumplins; or when bacon, or any kind of ſalted or ſmoaked meat is given, to cut it fine and mix it with the bread which is eaten in the ſoup. If the bread be fried, the Food will be much improved; but this will be attended with ſome additional expence.—Rye-bread is as good, if not better, for frying, than bread made of wheat flour; and it is commonly not half ſo dear.—Perhaps rye-bread fried might be furniſhed almoſt as cheap as wheaten bread not fried; and if this could be done, it would certainly be a very great improvement.

* This allowance is evidently much too large; but I was willing to ſhow what the expence of feeding the Poor would be at *the higheſt calculation*. I have eſtimated the 7 ounces of rye-bread, mentioned above, at what it ought to coſt when rye is 7 s. 6 d. the buſhel, its preſent price in London.

There

There is another way by which theſe cheap ſoups may be made exceedingly palatable and ſavoury; —which is by mixing with them a very ſmall quantity of *red herrings*, minced very fine, or pounded in a mortar.—There is no kind of cheap Food, I believe, that has ſo much taſte as red herrings, or that communicates its flavour with ſo much liberality to other eatables; and to moſt palates it is remarkably agreeable.

Cheeſe may likewiſe be made uſe of for giving an agreeable reliſh to theſe ſoups; and a very ſmall quantity of it will be ſufficient for that purpoſe, provided it has a ſtrong taſte, and is properly applied.—It ſhould be grated to a powder with a grater, and a ſmall quantity of this powder thrown over the ſoup, *after it is diſhed out.*—This is frequently done at the ſumptuous tables of the rich, and is thought a great delicacy; while the Poor, who have ſo few enjoyments, have not been taught to avail themſelves of this, which is ſo much within their reach.

Thoſe whoſe avocations call them to viſit diſtant countries, and thoſe whoſe fortune enables them to travel for their amuſement or improvement, have many opportunities of acquiring uſeful information; and in conſequence of this intercourſe with ſtrangers, many improvements, and more *refinements*, have been introduced into this country; but the moſt important advantages that *might* be derived from an intimate knowledge of the manners and cuſtoms of different nations,—the introduction of improvements tending to facilitate the means

means of ſubſiſtence, and to increaſe the comforts and conveniences of the moſt neceſſitous and moſt numerous claſſes of ſociety,—have been, alas! little attended to. Our extenſive commerce enables us to procure, and we do actually import moſt of the valuable commodities which are the produce either of the ſoil, of the ocean, or of the induſtry of man in all the various regions of the habitable globe;—*but the reſult of the* EXPERIENCE OF AGES *reſpecting the uſe that can be made of thoſe commodities* has ſeldom been thought worth importing! I never ſee *maccaroni* in England, or *polenta* in Germany, upon the tables of the rich, without lamenting that thoſe cheap and wholeſome luxuries ſhould be monopolized by thoſe who ſtand leaſt in need of them; while the Poor, who, one would think, ought to be conſidered as having almoſt an *excluſive* right to them, (as they were both invented by the Poor of a neighbouring nation,) are kept in perfect ignorance of them.

But theſe two kinds of Food are ſo palatable, wholeſome, and nouriſhing, and may be provided ſo eaſily, and at ſo very cheap a rate in all countries, and particularly in Great Britain, that I think I cannot do better than to devote a few pages to the examination of them;—and I ſhall begin with Polenta, or *Indian Corn*, as it is called in this country.

CHAP. VI.

Of INDIAN CORN.—*It affords the cheapeſt and moſt nouriſhing Food known.—Proofs that it is more nouriſhing than Rice.—Different Ways of preparing or cooking it.—Computation of the Expence of feeding a Perſon with it, founded on Experiment.—Approved Receipt for making an* INDIAN PUDDING.

I CANNOT help increaſing the length of this Eſſay much beyond the bounds I originally aſſigned to it, in order to have an opportunity of recommending a kind of Food which I believe to be beyond compariſon the moſt nouriſhing, cheapeſt, and moſt wholeſome that can be procured for feeding the Poor.—This is *Indian Corn*, a moſt valuable production; and which grows in almoſt all climates; and though it does not ſucceed remarkably well in Great Britain, and in ſome parts of Germany, yet it may eaſily be had in great abundance, from other countries; and commonly at a very low rate.

The common people in the northern parts of Italy live almoſt entirely upon it; and throughout the whole Continent of America, it makes a principle article of Food.—In Italy it is called *Polenta*, where it is prepared or cooked in a variety of ways, and forms the baſis of a number of very nouriſhing diſhes.—The moſt common way however of uſing it in that country is to grind it

into meal, and with water to make it into a thick kind of pudding, like what in this country is called a haſty-pudding, which is eaten with various kinds of ſauce, and ſometimes without any ſauce.

In the northern parts of North America, the common houſehold bread throughout the country is compoſed of one part of Indian meal and one part of rye meal; and I much doubt whether a more wholeſome, or more nouriſhing kind of bread can be made.

Rice is univerſally allowed to be very nouriſhing,—much more ſo even than wheat; but there is a circumſtance well known to all thoſe who are acquainted with the details of feeding the negro ſlaves in the ſouthern ſtates of North America, and in the Weſt Indies, that would ſeem to prove, in a very deciſive and ſatisfactory manner, that *Indian Corn is even more nouriſhing than Rice.*—In thoſe countries, where rice and Indian Corn are both produced in the greateſt abundance, the negroes have frequently had their option between theſe two kinds of Food; and have invariably preferred the latter.—The reaſons they give for this preference they expreſs in ſtrong, though not in very delicate terms.—They ſay that "*Rice turns to water in "their bellies*, and runs off;"—but "Indian Corn "*ſtays with them and makes ſtrong to work.*"

This account of the preference which negroes give to Indian Corn for Food, and of their reaſons for this preference, was communicated to me by two gentlemen of moſt reſpectable character, well known in England, and now reſident in London, who

who were formerly planters; one in Georgia, and the other in Jamaica.

The nutritive quality which Indian Corn poſſeſſes in a moſt eminent degree, when employed for fattening hogs and poultry, and for giving ſtrength to working oxen, has long been univerſally known and acknowledged in every part of North America; and nobody in that country thinks of employing any other grain for thoſe purpoſes.

All theſe facts prove to a demonſtration that Indian Corn poſſeſſes very extraordinary nutritive powers; and it is well known that there is no ſpecies of grain that can be had ſo cheap, or in ſo great abundance;—it is therefore well worthy the attention of thoſe who are engaged in providing cheap and wholeſome Food for the Poor,—or in taking meaſures for warding off the evils which commonly attend a general ſcarcity of proviſions, to conſider in time, how this uſeful article of Food may be procured in large quantities, and how the introduction of it into common uſe can moſt eaſily be effected.

In regard to the manner of uſing Indian Corn, there are a vaſt variety of different ways in which it may be prepared, or cooked, in order to its being uſed as Food.—One ſimple and obvious way of uſing it, is to mix it with wheat, rye, or barley meal, in making bread; but when it is uſed for making bread, and particularly when it is mixed with wheat flour, it will greatly improve the quality of the bread if the Indian meal, (the coarſer part of the bran being firſt ſeparated from it by ſifting,) be previouſly mixed with water, and boiled for a conſi-

conſiderable length of time,—two or three hours for inſtance, over a ſlow fire, before the other meal or flour is added to it.—This boiling, which, if the proper quantity of water is employed, will bring the maſs to the conſiſtency of a thin pudding, will effectually remove a certain diſagreeable *raw taſte* in the Indian Corn, which ſimple baking will not entirely take away; and the wheat flour being mixed with this pudding after it has been taken from the fire and cooled, and the whole well kneaded together, may be made to riſe, and be formed into loaves, and baked into bread, with the ſame facility that bread is made of wheat flour alone, or of any mixtures of different kinds of meal.

When the Indian meal is previouſly prepared by boiling, in the manner here deſcribed, a moſt excellent, and very palatable kind of bread, not inferior to wheaten bread, may be made of equal parts of this meal and of common wheat flour.

But the moſt ſimple, and I believe the beſt, and moſt economical way of employing Indian Corn as Food, is to make it into *puddings*.—There is, as I have already obſerved, a certain rawneſs in the taſte of it, which nothing but long boiling can remove; but when that diſagreeable taſte is removed, it becomes extremely palatable; and that it is remarkably wholeſome, has been proved by ſo much experience that no doubts can poſſibly be entertained of that fact.

The culture of it requires more labour than moſt other kinds of grain; but, on the other hand, the produce is very abundant, and it is always much cheaper than either wheat or rye.—The

price

price of it in the Carolinas, and in Georgia, has often been as low as eighteen pence, and ſometimes as *one ſhilling* ſterling *per* buſhel;—but the Indian Corn which is grown in thoſe ſouthern ſtates is much inferior, both in weight and in its qualities, to that which is the produce of colder climates.—Indian Corn of the growth of Canada and the New England ſtates, which is generally thought to be worth twenty *per cent.* more *per* buſhel than that which is grown in the ſouthern ſtates, may commonly be bought for two and ſixpence, or three ſhillings a buſhel.

It is now three ſhillings and ſixpence a buſhel at Boſton; but the prices of proviſions of all kinds have been much raiſed of late in all parts of America, owing to the uncommonly high prices which are paid for them in the European markets ſince the commencement of the preſent war.

Indian Corn and rye are very nearly of the ſame weight, but the former gives rather more flour, when ground and ſifted, than the latter.—I find by a report of the Board of Agriculture, of the 10th of November 1795, that three buſhels of Indian Corn weighed 1 cwt. 1 qr. 18 lb. (or 53 lb. each buſhel), and gave 1 cwt. 20 lb. of flour and 26 lb. of bran; while three buſhels of rye, weighing 1 cwt. 1 qr. 22 lb. (or 54 lb. the buſhel), gave only 1 cwt. 17 lb. of flour and 28 lb. of bran.—But I much ſuſpect that the Indian Corn uſed in theſe experiments was not of the beſt quality *.

I ſaw ſome of it, and it appeared to me to be of that kind which is commonly grown in the

* Farther inquiries which have ſince been made, have proved that theſe ſuſpicions were not without foundation.

ſouthern

ſouthern ſtates of North America.—Indian Corn of the growth of colder climates is, probably, at leaſt as heavy as wheat, which weighs at a medium about 58 lb. *per* buſhel, and I imagine it will give nearly as much flour *.

In regard to the moſt advantageous method of uſing Indian Corn as Food, I would ſtrongly recommend, particularly when it is employed for feeding the Poor, a diſh made of it that is in the higheſt eſtimation throughout America, and which is really very good, and very nouriſhing. This is called *haſty-pudding;* and it is made in the following manner: A quantity of water, proportioned to the quantity of haſty-pudding intended to be made, is put over the fire in an open iron pot, or kettle, and a proper quantity of ſalt for ſeaſoning the pudding being previouſly diſſolved in the water, Indian meal is ſtirred into it, by little and little, with a wooden ſpoon with a long handle, while the water goes on to be heated and made to boil;—great care being taken to put in the meal by very ſmall quantities, and by ſifting it ſlowly through the fingers of the left hand, and ſtirring the water about very briſkly at the ſame time with the

* Since writing the above, I have had an opportunity of aſcertaining, in the moſt deciſive and ſatisfactory manner, the facts relative to the weight of Indian Corn of the growth of the northern ſtates of America. A friend of mine, an American gentleman, reſident in London, (George Erving, Eſq. of Great George-ſtreet, Hanover-ſquare,) who, in common with the reſt of his countrymen, ſtill retains a liking for Indian Corn, and imports it regularly every year from America, has juſt received a freſh ſupply of it, by one of the laſt ſhips which has arrived from Boſton in New England; and at my deſire he weighed a buſhel of it, and found it to weigh 61 lb.: It coſt him at Boſton three ſhillings and ſixpence ſterling the buſhel.

wooden ſpoon, with the right hand, to mix the meal with the water in ſuch a manner as to prevent lumps being formed.—The meal ſhould be added ſo ſlowly, that, when the water is brought to boil, the maſs ſhould not be thicker than water-gruel, and half an hour more, at leaſt, ſhould be employed to add the additional quantity of meal neceſſary for bringing the pudding to be of the proper conſiſtency; during which time it ſhould be ſtirred about continually, and kept conſtantly boiling.—The method of determining when the pudding has acquired the proper conſiſtency is this;—the wooden ſpoon uſed for ſtirring it being placed upright in the middle of the kettle, if it falls down, more meal muſt be added; but if the pudding is ſufficiently thick and adheſive to ſupport it in a vertical poſition, it is declared to be *proof*; and no more meal is added.—If the boiling, inſtead of being continued only half an hour, be prolonged to three quarters of an hour, or an hour, the pudding will be conſiderably improved by this prolongation.

This haſty-pudding, when done, may be eaten in various ways.—It may be put, while hot, by ſpoonfuls into a bowl of milk, and eaten with the milk with a ſpoon, in lieu of bread; and uſed in this way it is remarkably palatable.—It may likewiſe be eaten, while hot, with a ſauce compoſed of butter and brown ſugar, or butter and molaſſes, with or without a few drops of vinegar; and however people who have not been accuſtomed to this American cookery may be prejudiced againſt it, they will find upon trial that it makes a moſt excellent diſh, and one which never fails to be much liked

liked by thoſe who are accuſtomed to it.—The univerſal fondneſs of Americans for it proves that it muſt have ſome merit;—for in a country which produces all the delicacies of the table in the greateſt abundance, it is not to be ſuppoſed that a whole nation ſhould have a taſte ſo depraved as to give a decided preference to any particular ſpecies of Food which has not ſomething to recommend it.

The manner in which haſty-pudding is eaten with butter and ſugar, or butter and molaſſes, in America, is as follows: The haſty-pudding being ſpread out equally upon a plate, while hot, an excavation is made in the middle of it, with a ſpoon, into which excavation a piece of butter, as large as a nutmeg, is put; and upon it, a ſpoonful of brown ſugar, or more commonly of molaſſes.—The butter being ſoon melted by the heat of the pudding, mixes with the ſugar, or molaſſes, and forms a ſauce, which, being confined in the excavation made for it, occupies the middle of the plate.—The pudding is then eaten with a ſpoon, each ſpoonful of it being dipt into the ſauce before it is carried to the mouth; care being had in taking it up, to begin on the outſide, or near the brim of the plate, and to approach the centre by regular advances, in order not to demoliſh too ſoon the excavation which forms the reſervoir for the ſauce.

If I am prolix in theſe deſcriptions, my reader muſt excuſe me; for perſuaded as I am that the action of Food upon the palate, and conſequently the pleaſure of eating, depends very much indeed

upon the *manner* in which the Food is applied to the organs of taſte, I have thought it neceſſary to mention, and even to illuſtrate in the cleareſt manner, every circumſtance which appeared to me to have influence in producing thoſe important effects.

In the caſe in queſtion, as it is the ſauce alone which gives taſte and palatableneſs to the Food, and conſequently is the cauſe of the pleaſure enjoyed in eating it, the importance of applying, or uſing it, in ſuch a manner as to produce the greateſt and moſt durable effect poſſible on the organs of taſte, is quite evident; and in the manner of eating this Food which has here been deſcribed and recommended, the ſmall quantity of ſauce uſed, (and the quantity muſt be ſmall, as it is the expenſive article,) is certainly applied to the palate more immediately;—by a greater ſurface;—and in a ſtate of greater condenſation;—and conſequently acts upon it more powerfully; and continues to act upon it for a greater length of time, than it could well be made to do when uſed in any other way.—Were it more intimately mixed with the pudding, for inſtance, inſtead of being merely applied to its external ſurface, its action would certainly be much leſs powerful; and were it poured over the pudding, or was proper care not taken to keep it confined in the little excavation or reſervoir made in the midſt of the pudding to contain it, much of it would attach itſelf and adhere to the ſurface of the plate and be loſt.

Haſty-pudding has this in particular to recommend it,—and which renders it ſingularly uſeful

as Food for poor families,—that when more of it is made at once than is immediately wanted, what remains may be preſerved good for ſeveral days, and a number of very palatable diſhes may be made of it.—It may be cut in thin ſlices, and toaſted before the fire, or on a gridiron, and eaten inſtead of bread, either in milk, or in any kind of ſoup or pottage; or with any other kind of Food with which bread is commonly eaten; or it may be eaten cold, without any preparation, with a warm ſauce made of butter, molaſſes, or ſugar, and a little vinegar.—In this laſt-mentioned way of eating it, it is quite as palatable, and I believe more wholeſome, than when eaten warm; that is to ſay, when it is firſt made.—It may likewiſe be put cold, without any preparation, into hot milk; and this mixture is by no means unpalatable, particularly if it be ſuffered to remain in the milk till it is warmed throughout, or if it be boiled in the milk for a few moments.

A favourite diſh in America, and a very good one, is made of cold boiled cabbage chopped fine, with a ſmall quantity of cold boiled beef, and ſlices of cold haſty-pudding, all fried together in butter or hog's lard.

Though haſty-puddings are commonly made of Indian meal, yet it is by no means uncommon to make them of equal parts of Indian, and of rye meal;—and they are ſometimes made of rye meal alone; or of rye meal and wheat flour mixed.

To give a ſatisfactory idea of the expence of preparing haſty puddings in this country, (Eng-

land,) and of feeding the Poor with them, I made the following experiment:—About 2 pints of water, which weighed juſt 2 lb. Avoirdupois, were put over the fire in a ſaucepan of a proper ſize, and 58 grains in weight or $\frac{1}{120}$ of a pound of ſalt being added, the water was made to boil.—During the time that it was heating, ſmall quantities of Indian meal were ſtirred into it, and care was taken, by moving the water briſkly about, with a wooden ſpoon, to prevent the meal from being formed into lumps; and as often as any lumps were obſerved, they were carefully broken with the ſpoon;—the boiling was then continued half an hour, and during this time the pudding was continually ſtirred about with the wooden ſpoon, and ſo much more meal was added as was found neceſſary to bring the pudding to be of the proper conſiſtency.

This being done, it was taken from the fire and weighed, and was found to weigh juſt 1 lb. 11$\frac{1}{2}$ oz. —Upon weighing the meal which remained, (the quantity firſt provided having been exactly determined by weight in the beginning of the experiment,) it was found that juſt *half a pound* of meal had been uſed.

From the reſult of this experiment it appears, that for each pound of Indian meal employed in making haſty-puddings, we may reckon 3 lb. 9 oz. of the pudding.—And the expence of providing this kind of Food, or the coſt of it by the pound, at the preſent high price of grain in this country, may be ſeen by the following computation:

Half

	£.	s.	d.
Half a pound of Indian meal, (the quantity uſed in the foregoing experiment,) at 2 d. a pound or 7 s. 6 d. a buſhel for the corn, (the price ſtated in the report of the board of Agriculture of the 10th of November 1795, ſo often referred to,) coſts	0	0	1
58 grains or $\frac{1}{120}$ of a pound of ſalt, at 2 d. *per* pound	0	0	$0\frac{1}{60}$
Total,	0	0	$1\frac{1}{60}$

Now, as the quantity of pudding prepared with theſe ingredients was 1 lb. $11\frac{1}{2}$ oz. and the coſt of the ingredients amounted to *one penny and one ſixtieth of a penny*, this gives for the coſt of one pound of haſty-pudding $\frac{7}{12}\frac{1}{0}$ of a penny, or $2\frac{1}{3}$ farthings, very nearly.—It muſt however be remembered that the Indian Corn is here reckoned at a very exorbitant price indeed *.

But before it can be determined what the expence will be of feeding the Poor with this kind of Food, it will be neceſſary to aſcertain how much of it will be required to give a comfortable meal to one perſon; and how much the expence will be of providing the ſauce for that quantity of pudding.—To determine theſe two points with ſome degree of preciſion, I made the following experiment.—Having taken my breakfaſt, conſiſting of two diſhes of coffee, with cream, and a dry toaſt,

* The price of Indian meal as it is here eſtimated,—(2 d. a pound,) is at leaſt twice as much as it would coſt in Great Britain in common years, if care was taken to import it at the cheapeſt rate.

at my uſual hour of breakfaſting, (nine o'clock in the morning,) and having faſted from that time till five o'clock in the afternoon, I then dined upon my haſty-pudding, with the American ſauce already deſcribed, and I found, after my appetite for Food was perfectly ſatisfied, and I felt that I had made a comfortable dinner, that I had eaten juſt 1 lb. $1\frac{1}{2}$ oz. of the pudding; and the ingredients, of which the ſauce which was eaten with it was compoſed, were half an ounce of butter; three quarters of an ounce of molaſſes; and 21 grains or $\frac{1}{112}$ of a pint of vinegar.

The coſt of this dinner may be ſeen by the following computation:

For the Pudding.

	Farthings.
1 lb. $1\frac{1}{2}$ oz. of haſty-pudding, at $2\frac{1}{4}$ farthings a pound	$2\frac{1}{2}$

For the Sauce.

Half an ounce of butter, 10 d. *per* pound	$1\frac{1}{4}$
Three quarters of an ounce of molaſſes, at 6 d. *per* pound	1
$\frac{1}{112}$ of a pint of vinegar, at 2 s. 8 d. the gallon	$0\frac{1}{16}$
Total for the Sauce,	$2\frac{5}{16}$ farthings.
Sum total of expences for this dinner, for the pudding and its ſauce	$4\frac{13}{16}$ farthings.

Or ſomething leſs than one penny farthing.

I believe it would not be eaſy to provide a dinner in London, at this time, when proviſions of all

all kinds are ſo dear, equally grateful to the palate and ſatisfying to the cravings of hunger, at a ſmaller expence.—And that this meal was ſufficient for all the purpoſes of nouriſhment appears from hence, that though I took my uſual exerciſe, and did not ſup after it, I neither felt any particular faintneſs, nor any unuſual degree of appetite for my breakfaſt next morning.

I have been the more particular in my account of this experiment, to ſhow in what manner experiments of this kind ought, in my opinion, to be conducted;—and alſo to induce others to engage in theſe moſt uſeful inveſtigations.

It will not eſcape the obſervation of the reader, that ſmall as the expence was of providing this dinner, yet very near one-half of that ſum was laid out in purchaſing the ingredients for the ſauce.—But it is probable that a conſiderable part of that expence might be ſaved.—In Italy, *polentæ*, which is nothing more than haſty-pudding made with Indian meal and water, is very frequently, and I believe commonly eaten without any ſauce, and when on holidays or other extraordinary occaſions they indulge themſelves by adding a ſauce to it, this ſauce is far from expenſive.—It is commonly nothing more than a very ſmall quantity of butter ſpread over the flat ſurface of the hot polenta which is ſpread out thin in a large platter; with a little Parmezan or other ſtrong cheeſe, reduced to a coarſe powder by grating it with a grater, ſtrewed over it.

Perhaps this Italian ſauce might be more agreeable to an Engliſh palate than that commonly uſed

uſed in America. It would certainly be leſs expenſive, as much leſs butter would be required, and as cheeſe in this country is plenty and cheap. But whatever may be the ſauce uſed with Food prepared of Indian Corn, I cannot too ſtrongly recommend the uſe of that grain.

While I was employed in making my experiment upon haſty pudding, I learnt from my ſervant, (a Bavarian,) who aſſiſted me, a fact which gave me great pleaſure, as it ſerved to confirm me in the opinion I have long entertained of the great merit of Indian Corn.—He aſſured me that polenta is much eſteemed by the peaſantry in Bavaria, and that it makes a very conſiderable article of their Food; that it comes from Italy through the Tyrol; and that it is commonly ſold in Bavaria *at the ſame price as wheat flour!* Can there be ſtronger proofs of its merit?

The negroes in America prefer it to rice; and the Bavarian peaſants to wheat.—Why then ſhould not the inhabitants of this iſland like it? It will not, I hope, be pretended, that it is in this favoured ſoil alone that prejudices take ſuch deep root that they are never to be eradicated, or that there is any thing peculiar in the conſtruction of the palate of an Engliſhman.

The objection that may be made to Indian Corn, —that it does not thrive well in this country,—is of no weight. The ſame objection might, with equal reaſon, be made to rice, and twenty other articles of Food now in common uſe.

It has ever been conſidered, by thoſe verſed in the ſcience of political economy, as an object of the firſt

firſt importance to keep down the prices of proviſions, particularly in manufacturing and commercial countries;—and if there be a country on earth where this ought to be done, it is ſurely Great Britain:—and there is certainly no country which has the means of doing it ſo much in its power.

But the progreſs of national improvements muſt be very ſlow, however favourable other circumſtances may be, where thoſe citizens, who, by their rank and ſituation in ſociety, are deſtined to direct the public opinion, *affect* to conſider the national prejudices as unconquerable *.—But to return to the ſubject immediately under conſideration.

Though haſty-pudding is, I believe, the cheapeſt Food that can be prepared with Indian Corn, yet ſeveral other very cheap diſhes may be made of it, which in general are conſidered as being more palatable, and which, moſt probably, would be preferred in this country; and among theſe, what in America is called a *plain Indian pudding* certainly holds the firſt place, and can hardly fail to be much liked by thoſe, who will be perſuaded to try it.—It is not only cheap and wholeſome, but a great delicacy; and it is principally on account of theſe puddings that the Americans, who reſide in this country, import annually for their own conſumption Indian Corn from the Continent of America.

* Thoſe who diſlike trouble, and feel themſelves called upon by duty and honour to take an active part in undertakings for the public good, are extremely apt to endeavour to excuſe,—to themſelves as well as to the world,—their inactivity and ſupineneſs, by repreſenting the undertaking in queſtion as being ſo very difficult as to make all hope of ſucceſs quite chimerical and ridiculous.

In

In order to be able to give the moſt particular and ſatisfactory information reſpecting the manner of preparing theſe Indian puddings, I cauſed one of them to be made here, (in London,) under my immediate direction, by a perſon born and brought up in North America, and who underſtands perfectly the American art of cookery in all its branches *. This pudding, which was allowed by competent judges who taſted it to be as good as they had ever eaten, was compoſed and prepared in the following manner:

Approved Receipt for making a plain Indian pudding.

Three pounds of Indian meal (from which the bran had been ſeparated by ſifting it in a common hair ſieve) were put into a large bowl, and *five pints of boiling water* were put to it, and the whole well ſtirred together; *three quarters of a pound of molaſſes* and *one ounce of ſalt* were then added to it, and theſe being well mixed, by ſtirring them with the other ingredients, the pudding was poured into a fit bag; and the bag being tied up, (an empty ſpace being left in the bag in tying it, equal to about one-ſixth of its contents, for giving room for the pudding to ſwell,) this pudding was put into a kettle of *boiling water*, and was boiled *ſix hours* without intermiſſion; the loſs of the water in the kettle by evaporation during this time being frequently replaced with *boiling water* from another kettle.

* The houſekeeper of my friend and countryman, Sir William Pepperel, Bart. of Upper Seymour Street, Portman Square.

The

The pudding upon being taken out of the bag weighed *ten pounds* and *one ounce*; and it was found to be perfectly done, not having the ſmalleſt remains of that raw taſte ſo diſagreeable to all palates, and particularly to thoſe who are not uſed to it, which always predominates in diſhes prepared of Indian meal when they are not ſufficiently cooked.

As this raw taſte is the only well-founded objection that can be made to this moſt uſeful grain, and is, I am perſuaded, the only cauſe which makes it diſliked by thoſe who are not accuſtomed to it, I would adviſe thoſe who may attempt to introduce it into common uſe, where it is not known, to begin with Indian (bag) puddings, ſuch as I have here been deſcribing; and that this is a very cheap kind of Food will be evident from the following computation:

Expence of preparing the Indian Pudding above mentioned.

		Pence.		Pence.
3 lbs. of Indian meal at	——	$1\frac{1}{2}$	——	$4\frac{1}{2}$
$\frac{3}{4}$ lb. of molaſſes at	——	6	——	$4\frac{1}{2}$
1 oz. of ſalt at 2 d. *per* lb.	——	—	——	$0\frac{1}{3}$
			Total for the ingredients	$9\frac{1}{6}$

As this pudding weighed $10\frac{1}{16}$ lbs. and the ingredients coſt *nine pence* and *half a farthing*, this gives *three farthings and a half* for each pound of pudding.

It will be obſerved, that in this computation I have reckoned the Indian meal at no more than $1\frac{1}{2}$ d. *per* pound, whereas in the calculation which was given to determine the expence of preparing haſty-pudding

pudding it was taken at *two pence* a pound. I have here reckoned it at 1½ d. a pound, becauſe I am perſuaded it might be had here in London for that price, and even for leſs.—That which has lately been imported from Boſton has not coſt ſo much; and were it not for the preſent univerſal ſcarcity of proviſions in Europe, which has naturally raiſed the price of grain in North America, I have no doubt but Indian meal might be had in this country for leſs than *one penny farthing per* pound.

In compoſing the Indian pudding above mentioned, the molaſſes is charged at 6 d. the pound, but that price is very exorbitant. A gallon of molaſſes weighing about 10 lb. commonly coſts in the Weſt Indies from 7 d. to 9 d. ſterling; and allowing ſufficiently for the expences of freight, inſurance, and a fair profit for the merchant, it certainly ought not to coſt in London more than 1 s. 8 d. the gallon *; and this would bring it to 2 d. *per* pound.

If we take the prices of Indian meal and molaſſes as they are here aſcertained, and compute the expence of the ingredients for the pudding before mentioned, it will be as follows:

		Pence.		Pence.
3 lb. of Indian meal at	——	1¼	——	3¾
¾ lb. of molaſſes at	——	2	——	1½
1 oz. ſalt at 2 d. *per* lb.	——	—	——	0⅛
			Total,	5⅜

Now as the pudding weighed 10$\frac{7}{16}$ lbs. this gives *two farthings*, very nearly, for each pound of pud-

* Molaſſes imported from the French Weſt India Iſlands into the American States is commonly ſold there from 12 d. to 14 d. the gallon.

ding;

ding; which is certainly very cheap indeed, particularly when the excellent qualities of the Food are conſidered.

This pudding, which ought to come out of the bag ſufficiently hard to retain its form, and even to be cut into ſlices, is ſo rich and palatable, that it may very well be eaten without any ſauce; but thoſe who can afford it commonly eat it with butter. A ſlice of the pudding, about half an inch, or three quarters of an inch in thickneſs, being laid hot upon a plate, an excavation is made in the middle of it, with the point of the knife, into which a ſmall piece of butter, as large perhaps as a nutmeg, is put, and where it ſoon melts. To expedite the melting of the butter, the ſmall piece of pudding which is cut out of the middle of the ſlice to form the excavation for receiving the butter, is frequently laid over the butter for a few moments, and is taken away (and eaten) as ſoon as the butter is melted. If the butter is not ſalt enough, a little ſalt is put into it after it is melted. The pudding is to be eaten with a knife and fork, beginning at the circumference of the ſlice, and approaching regularly towards the centre, each piece of pudding being taken up with the fork, and dipped into the butter, or dipped into it *in part only*, as is commonly the caſe, before it is carried to the mouth.

To thoſe who are accuſtomed to view objects upon a great ſcale, and who are too much employed in directing *what* ought to be done, to deſcend to thoſe humble inveſtigations which are neceſſary

neceſſary to ſhow *how* it is to be effected, theſe details will doubtleſs appear trifling and ridiculous; but as my mind is ſtrongly impreſſed with the importance of giving the moſt minute and circumſtantial information reſpecting the *manner of performing* any operation, however ſimple it may be, to which people have not been accuſtomed, I muſt beg the indulgence of thoſe who may not feel themſelves particularly intereſted in theſe deſcriptions.

In regard to the amount of the expence for ſauce for a *plain Indian (bag) pudding*,—I have found that when butter is uſed for that purpoſe, (and no other ſauce ought ever to be uſed with it,) *half an ounce* of butter will ſuffice for *one pound* of the pudding.—It is very poſſible to contrive matters ſo as to uſe much more;—perhaps twice, or three times as much;—but if the directions relative to the *manner* of eating this food, which have already been given, are ſtrictly followed, the allowance of butter here determined will be quite ſufficient for the purpoſe for which it is deſigned; that is to ſay, for giving an agreeable reliſh to the pudding.—Thoſe who are particularly fond of butter may uſe three quarters of an ounce of it with a pound of the pudding; but I am certain, that to uſe an ounce would be to waſte it to no purpoſe whatever.

If now we reckon Iriſh, or other firkin butter, (which, as it is ſalted, is the beſt that can be uſed,) at eight pence the pound, the ſauce for one pound of pudding, namely, half an ounce of butter, will coſt juſt *one farthing;* and this added to the coſt of the pudding,

pudding, *two farthings* the pound, gives *three farthings* for the coſt by the pound of this kind of food, *with its ſauce*; and, as this food is not only very rich and nutritive, but ſatisfying at the ſame time in a very remarkable degree, it appears how well calculated it is for feeding the Poor.

It ſhould be remembered, that the molaſſes uſed as an ingredient in theſe Indian puddings, does not ſerve merely to give taſte to them;—it acts a ſtill more important part;—it gives what, in the language of the kitchen, is called *lightneſs*.—It is a ſubſtitute for eggs, and nothing but eggs can ſerve as a ſubſtitute for it, except it be treacle; which, in fact, is a kind of molaſſes; or perhaps coarſe brown ſugar, which has nearly the ſame properties.—It prevents the pudding from being heavy, and clammy; and without communicating to it any diſagreeable ſweet taſte, or any thing of that flavour peculiar to molaſſes, gives it a richneſs uncommonly pleaſing to the palate. And to this we may add, that it is nutritive in a very extraordinary degree.—This is a fact well known in all countries where ſugar is made.

How far the laws and regulations of trade exiſting in this country might render it difficult to procure molaſſes from thoſe places where it may be had at the cheapeſt rate, I know not; nor can I tell how far the free importation of it might be detrimental to our public finances;—I cannot, however, help thinking, that it is ſo great an object to this country to keep down the prices of proviſions, or rather to check the alarming celerity

with which they are riſing, that means ought to be found to facilitate the importation, and introduction into common uſe, of an article of Food of ſuch extenſive utility. It might ſerve to correct, in ſome meaſure, the baleful influence of another article of foreign produce, (tea,) which is doing infinite harm in this iſland.

A point of great importance in preparing an Indian pudding, is to boil it *properly* and *ſufficiently*. The water muſt be actually boiling when the pudding is put into it; and it never muſt be ſuffered to ceaſe boiling for a moment, till it is done; and if the pudding is not boiled full ſix hours, it will not be ſufficiently cooked.—Its hardneſs, when done, will depend on the ſpace left in the bag for its expanſion. The conſiſtency of the pudding ought to be ſuch, that it can be taken out of the bag without falling to pieces;—but it is always better, on many accounts, to make it too hard than too ſoft. The form of the pudding may be that of a cylinder; or rather of a truncated cone, the largeſt end being towards the mouth of the bag, in order that it may be got out of the bag with greater facility; or it may be made of a globular form, by tying it up in a napkin.—But whatever is the form of the pudding, the bag, or napkin in which it is to be boiled, muſt be wet in boiling water before the pudding (which is quite liquid before it is boiled) is poured into it; otherwiſe it will be apt to run through the cloth.

Though this pudding is ſo good, perfectly plain, when made according to the directions here given,

that

that I do not think it capable of any real improvement; yet there are various additions that may be made to it, and that frequently are made to it, which may perhaps be thought by ſome to render it more palatable, or otherwiſe to improve it. *Suet* may, for inſtance, be added, and there is no ſuet pudding whatever ſuperior to it; and as no ſauce is neceſſary with a ſuet pudding, the expence for the ſuet will be nearly balanced by the ſaving of butter. To a pudding of the ſize of that juſt deſcribed, in the compoſition of which three pounds of Indian meal were uſed, one pound of ſuet will be ſufficient; and this, in general, will not coſt more than from five pence to ſix pence, even in London;—and the butter for ſauce to a plain pudding of the ſame ſize would coſt nearly as much. The ſuet pudding will indeed be rather the cheapeſt of the two, for the pound of ſuet will add a pound in weight to the pudding;—whereas the butter will only add five ounces.

As the pudding, made plain, weighing $10\frac{1}{16}$lb. coſt $5\frac{3}{4}$ pence, the ſame pudding, with the addition of one pound of ſuet, would weigh $11\frac{1}{16}$lb. and would coſt $11\frac{1}{2}$ pence,—reckoning the ſuet at ſixpence the pound.—Hence it appears that Indian ſuet pudding may be made in London for about *one penny* a pound.—Wheaten bread, which is by no means ſo palatable, and certainly not half ſo nutritive, now coſts ſomething more than three pence the pound: and to this may be added, that dry bread can hardly be eaten alone; but of ſuet pudding a very comfortable meal may be made without any thing elſe.

A pudding in great repute in all parts of North America, is what is called an *apple pudding*. This is an Indian pudding, ſometimes with, and ſometimes without ſuet, with dried cuttings of ſweet apples mixed with it; and when eaten with butter, it is moſt delicious Food. Theſe apples, which are pared as ſoon as they are gathered from the tree, and being cut into ſmall pieces, are freed from their cores, and thoroughly dried in the ſun, may be kept good for ſeveral years. The proportions of the ingredients uſed in making theſe apple puddings are various; but, in general, about one pound of dried apples is mixed with three pounds of meal,—three quarters of a pound of molaſſes,—half an ounce of ſalt, and five pints of boiling water.

In America, various kinds of berries, found wild in the woods, ſuch as huckle-berries, bel-berries, whortle-berries, &c. are gathered and dried, and afterwards uſed as ingredients in Indian puddings: and dried cherries and plums may be made uſe of in the ſame manner.

All theſe Indian puddings have this advantage in common, that they are very good *warmed up*.—They will all keep good ſeveral days; and when cut into thin ſlices and toaſted, are an excellent ſubſtitute for bread.

It will doubtleſs be remarked, that in computing the expence of providing theſe different kinds of puddings, I have taken no notice of the expence which will be neceſſary for fuel to cook them.—This is an article which ought undoubtedly to be taken into the account. The reaſon of my not doing

doing it here is this:—Having, in the courſe of my Experiments on Heat, found means to perform all the common operations of cookery with a ſurpriſingly ſmall expence of fuel, I find that the expence in queſtion, when the proper arrangements are made for ſaving fuel, will be very trifling. And farther, as I mean ſoon to publiſh my Treatiſe on the Management of Heat, in which I ſhall give the moſt ample directions relative to the mechanical arrangements of kitchen fire-places, and the beſt forms for all kinds of kitchen utenſils, I was deſirous not to anticipate a ſubject which will more naturally find its place in another Eſſay.—In the mean time I would obſerve for the ſatisfaction of thoſe who may have doubts reſpecting the ſmallneſs of the expence neceſſary for fuel in cooking for the Poor, that the reſult of many experiments, of which I ſhall hereafter publiſh a particular account, has proved in the moſt ſatisfactory manner, that when Food is prepared in large quantities, and cooked in kitchens properly arranged, the expence for fuel ought never to amount to more than *two per cent.* of the coſt of the Food, even where victuals of the cheapeſt kind are provided, ſuch as is commonly uſed in feeding the Poor. In the Public Kitchen of the Houſe of Induſtry at Munich the expence for fuel is leſs than *one per cent.* of the coſt of the Food, as may be ſeen in the computation, page 206, Chap. III. of this Eſſay: and it ought not to be greater in many parts of Great Britain.

With regard to the price at which Indian Corn can be imported into this country from North America in time of peace, the following information, which I procured through the medium of a friend, from Captain Scott, a moſt worthy man, who has been conſtantly employed above thirty years as maſter of a ſhip in the trade between London and Boſton in the State of Maſſachuſetts, will doubtleſs be conſidered as authentic *.

The following are the queſtions which were put to him,—with his anſwers to them:

Q. What is the freight, *per ton*, of merchandiſe from Boſton in North America to London in time of peace?——*A.* Forty ſhillings (ſterling).

Q. What is the freight, *per* barrel, of Indian Corn?——*A.* Five ſhillings.

Q. How much *per cent.* is paid for *inſurance* from Boſton to London in time of peace?——*A.* Two *per cent.*

Q. What is the medium price of Indian Corn, *per* buſhel, in New England?——*A.* Two ſhillings and ſixpence.

* This gentleman, who is as remarkable for his good fortune at ſea, as he is reſpectable on account of his private character and profeſſional knowledge, has croſſed the Atlantic Ocean the almoſt incredible number of *one hundred and ten times!* and without meeting with the ſmalleſt accident. He is now on the ſeas in his way to North America; and this voyage, which is his *hundred and eleventh*, he intends ſhould be his laſt.—May he arrive ſafe,—and may he long enjoy in peace and quiet the well-earned fruits of his laborious life! Who can reflect on the innumerable ſtorms he muſt have experienced, and perils he has eſcaped, without feeling much intereſted in his preſervation and happineſs?

Q. What

Q. What is the price of it at this time?——*A.* Three ſhillings and ſixpence.

Q. How many buſhels of Indian Corn are reckoned to a barrel?——*A. Four.*

From this account it appears that Indian Corn might, in time of peace, be imported into this country and ſold here for leſs than *four ſhillings* the buſhel;—and that it ought not to coſt at this moment much more than *five ſhillings* a buſhel.

If it be imported in caſks, (which is certainly the beſt way of packing it,) as the freight of a barrel containing four buſhels is five ſhillings, this gives 1 s. 3 d. a buſhel for freight; and if we add *one penny* a buſhel for inſurance, this will make the amount of freight and inſurance 1 s. 4 d. which, added to the prime coſt of the Corn in America, (2 s. 6 d. *per* buſhel in the time of peace, and 3 s. 6d. at this time,) will bring it to 3 s. 10 d. *per* buſhel in time of peace, and 4 s. 10 d. at this preſent moment.

A buſhel of Indian Corn of the growth of New England was found to weigh 61 lb.; but we will ſuppoſe it to weigh at a medium only 60 lb. *per* buſhel; and we will alſo ſuppoſe that to each buſhel of Corn when ground there is 9 lb. of bran, which is ſurely a very large allowance, and 1 lb. of waſte in grinding and ſifting;—this will leave 50lb. of flour for each buſhel of the Corn; and as it will coſt, in time of peace, only 3s. 10d. or 46 pence, this gives for each pound of flour $\frac{46}{50}$ of a penny, or $3\frac{3}{4}$ farthings very nearly.

If the price of the Indian Corn *per* buſhel be taken at 4s. 10d. what it ought to coſt at this

time in London, without any bounty on importation being brought into the account,—the price of the flour will be 4s. 10d. equal to 58 pence for 50 lb. in weight, or $1\frac{1}{6}$ penny the pound, which is leſs than one third of the preſent price of wheat flour. Rice, which is certainly not more nouriſhing than Indian Corn, coſts $4\frac{1}{2}$ pence the pound.

If $\frac{1}{15}$ of the value of Indian Corn be added to defray the expence of grinding it, the price of the flour will not even then be greater in London than *one penny* the pound in time of peace, and about *one penny farthing* at the preſent high price of that grain in North America. Hence it appears, that in ſtating the mean price in London of the flour of Indian Corn at *one penny farthing*, I have rather rated it too high than too low.

With regard to the expence of importing it, there may be, and doubtleſs there are frequently other expences beſides thoſe of freight and inſurance; but, on the other hand, a very conſiderable part of the expences attending the importation of it may be reimburſed by the profits ariſing from the ſale of the barrels in which it is imported, as I have been informed by a perſon who imports it every year, and always avails himſelf of that advantage.

One circumſtance much in favour of the introduction of Indian Corn into common uſe in this country is the facility with which it may be had in any quantity. It grows in all quarters of the globe, and almoſt in every climate; and in hot countries two or three crops of it may be raiſed from the ſame ground in the courſe of a year.—It ſucceeds equally well in the cold regions of Canada;—in the tem-

temperate climes of the United States of America;—and in the burning heats of the tropics; and it might be had from Africa and Aſia as well as from America. And were it even true,—what I never can be perſuaded to believe,—that it would be impoſſible to introduce it as an article of Food in this country, it might at leaſt be uſed as fodder for cattle, whoſe averſion to it, I will venture to ſay, would not be found to be *unconquerable*.

Oats now coſt near two pence the pound in this country. Indian Corn, which would coſt but a little more than half as much, would certainly be much more nouriſhing, even for horſes, as well as for horned cattle;—and as for hogs and poultry they ought never to be fed with any other grain. Thoſe who have taſted the pork and the poultry fatted on Indian Corn will readily give their aſſent to this opinion.

CHAP. VII.

Receipts for preparing various Kinds of cheap Food.—Of MACCARONI.—*Of* POTATOES.—*Approved Receipts for boiling Potatoes.—Of Potatoe Puddings.—Of Potatoe Dumplins.—Of boiled Potatoes with a Sauce.—Of Potatoe Sallad.—Of* BARLEY—*Is much more nutritious than Wheat.—Barley Meal, a good Subſtitute for Pearl Barley, for making Soups.—General Directions for preparing cheap Soups.—Receipt for the cheapeſt Soup that can be made.—Of* SAMP—*Method of preparing it—Is an excellent Subſtitute for Bread.—Of burnt Soup.—Of* RYE BREAD.

WHEN I began writing the foregoing Chapter of this Eſſay, I had hopes of being able to procure ſatisfactory information reſpecting the manner in which the maccaroni eaten by the Poor in Italy, and particularly in the kingdom of Naples, is prepared;—but though I have taken much pains in making theſe inquiries, my ſucceſs in them has not been ſuch as I could have wiſhed;—The proceſs, I have often been told, is very ſimple; and from the very low price at which maccaroni is ſold ready cooked, to the *Lazzaroni* in the ſtreets of Naples, it cannot be expenſive.—There is a better kind of maccaroni which is prepared and ſold by the nuns in ſome of the convents in Italy,

Italy, which is much dearer; but this ſort would in any country be too expenſive to be uſed as Food for the Poor.—It is however not dearer than many kinds of Food uſed by the Poor in this country; and as it is very palatable and wholeſome, and may be uſed in a variety of ways, a receipt for preparing it may perhaps not be unacceptable to many of my readers.

A Receipt for making that Kind of Maccaroni called in Italy TAGLIATI.

Take any number of freſh laid eggs and break them into a bowl or tray, beat them up with a ſpoon, but not to a froth,—add of the fineſt wheat flour as much as is neceſſary to form a dough of the conſiſtence of paſte.—Work this paſte well with a rolling-pin;—roll it out into very thin leaves; lay ten or twelve of theſe leaves one upon the other, and with a ſharp knife cut them into very fine threads.—Theſe threads (which, if the maſs is of a proper conſiſtency, will not adhere to each other) are to be laid on a clean board, or on paper, and dried in the air.

This maccaroni, (or *cut paſte* as it is called in Germany, where it is in great repute,) may be eaten in various ways; but the moſt common way of uſing it is to eat it with milk inſtead of bread, and with chicken broth, and other broths and ſoups, with which it is boiled. With proper care it may be kept good for many months.

It

It is ſometimes fried in butter, and in this way of cooking it, it forms a moſt excellent diſh indeed; inferior, I believe, to no diſh of flour that can be made. It is not, however, a very cheap diſh, as eggs and butter are both expenſive articles in moſt countries.

An inferiour kind of *cut paſte* is ſometimes prepared by the Poor in Germany, which is made ſimply of water and wheat flour, and this has more reſemblance to common maccaroni than that juſt deſcribed; and might, in many caſes, be uſed inſtead of it. I do not think, however, that it can be kept long without ſpoiling; whereas maccaroni, as is well known, may be kept good for a great length of time.—Though I have not been able to get any ſatisfactory information relative to the proceſs of making maccaroni, yet I have made ſome experiments to aſcertain the expence of cooking it, and of the coſt of the cheeſe neceſſary for giving it a reliſh.

Half a pound of maccaroni, which was purchaſed at an Italian ſhop in London, and which coſt ten pence *, was boiled till it was ſufficiently done, namely, about one hour and an half, when, being taken out of the boiling water and weighed, it was found to weigh thirty-one ounces

* This maccaroni would not probably have coſt one quarter of that ſum at Naples.—Common maccaroni is frequently ſold there as low as fourteen grains, equal to five pence half-penny ſterling the rottolo, weighing twenty-eight ounces and three quarters Avoirdupois, which is three pence ſterling the pound Avoirdupois. An inferiour kind of maccaroni, ſuch as is commonly ſold at Naples to the Poor, coſts not more than two pence ſterling the pound Avoirdupois.

and

and an half, or one pound fifteen ounces and an half. The quantity of cheeſe employed to give a reliſh to this diſh of boiled maccaroni, (and which was grated over it after it was put into the diſh,) was one ounce, and coſt *two farthings*.

Maccaroni is conſidered as very cheap Food in thoſe countries where it is prepared in the greateſt perfection, and where it is in common uſe among the lower claſſes of ſociety; and as wheat, of which grain it is always made, is a ſtaple commodity in this country, it would certainly be worth while to take ſome trouble to introduce the manufacture of it, particularly as it is already become an article of luxury upon the tables of the rich, and as great quantities of it are annually imported and ſold here at a moſt exorbitant price *.—But maccaroni is by no means the cheapeſt Food that can be provided for feeding the Poor, in this iſland;—nor do I believe it is ſo in any country.—*Polenta*, or *Indian Corn*, of which ſo much has already been ſaid,—and *Potatoes* of which too much cannot be ſaid,—are both much better adapted, in all reſpects, for that purpoſe.—Maccaroni would however, I am perſuaded, could it be prepared in this country, be much leſs expenſive than many kinds of Food now

* If maccaroni could be made in this country as cheap as it is made in Naples, that is to ſay, ſo as to be afforded for three pence ſterling the pound Avoirdupois, for the beſt ſort, (and I do not ſee why it ſhould not,) as half a pound of dry maccaroni weighs when boiled very nearly two pounds, each pound of boiled maccaroni would coſt only *three farthings*, and the cheeſe neceſſary for giving it a reliſh *one farthing* more, making together *one penny*; which is certainly a very moderate price for ſuch good and wholeſome Food.

commonly

commonly uſed by our Poor; and conſequently might be of conſiderable uſe to them.

With regard to *Potatoes*, they are now ſo generally known, and their uſefulneſs is ſo univerſally acknowledged, that it would be a waſte of time to attempt to recommend them.—I ſhall therefore content myſelf with merely giving receipts for a few cheap diſhes in which they are employed as a principal ingredient.

Though there is no article uſed as Food of which a greater variety of well-taſted and wholeſome diſhes may be prepared than of potatoes, yet it ſeems to be the unanimous opinion of thoſe who are moſt acquainted with theſe uſeful vegetables, that the beſt way of cooking them is to boil them ſimply, and with their ſkins on, in water.—But the manner of boiling them is by no means a matter of indifference. This proceſs is better underſtood in Ireland, where by much the greater part of the inhabitants live almoſt entirely on this Food, than any where elſe.

This is what might have been expected;—but thoſe who have never conſidered with attention the extreme ſlowneſs of the progreſs of national improvements, *where nobody takes pains to accelerate them*, will doubtleſs be ſurpriſed when they are told that in moſt parts of England, though the uſe of potatoes all over the country has for ſo many years been general, yet, to this hour, few, comparatively, who eat them, know how to dreſs them properly.—The inhabitants of thoſe counties which lie on the ſea-coaſt oppoſite to Ireland have adopted

adopted the Iriſh method of boiling potatoes; but it is more than probable that a century at leaſt would have been required for thoſe improvements to have made their way through the iſland, had not the preſent alarms on account of a ſcarcity of grain rouſed the public, and fixed their attention upon a ſubject too long neglected in this enlightened country.

The introduction of improvements tending to increaſe the comforts and innocent enjoyments of that numerous and uſeful claſs of mankind who earn their bread by the ſweat of their brow, is an object not more intereſting to a benevolent mind than it is important in the eyes of an enlightened ſtateſman.

There are, without doubt, *great men* who will ſmile at ſeeing theſe obſervations connected with a ſubject ſo humble and obſcure as the boiling of potatoes, but *good men* will feel that the ſubject is not unworthy of their attention.

The following directions for boiling potatoes, which I have copied from a late Report of the Board of Agriculture, I can recommend from my own experience:

"*On the boiling of Potatoes ſo as to be eat as "Bread.*

"There is nothing that would tend more to "promote the conſumption of potatoes than to "have the proper mode of preparing them as "Food generally known.—In London, this is

" little attended to; whereas in Lancaſhire and " Ireland the boiling of potatoes is brought to " very great perfection indeed. When prepared in " the following manner, if the quality of the root " is good, they may be eat as bread, a practice " not unuſual in Ireland.—The potatoes ſhould " be, as much as poſſible, of the ſame ſize, and " the large and ſmall ones boiled ſeparately.— " They muſt be waſhed clean, and, without paring " or ſcraping, put in a pot with cold water, not " ſufficient to cover them, as they will produce " themſelves, before they boil, a conſiderable quan- " tity of fluid.—They do not admit of being put " into a veſſel of boiling water like greens.—If the " potatoes are tolerably large, it will be ne- " ceſſary, as ſoon as they begin to boil, to throw in " ſome cold water, and occaſionally to repeat it, " till the potatoes are boiled to the heart, (which " will take from half an hour to an hour and a " quarter, according to their ſize,) they will other- " wiſe crack, and burſt to pieces on the outſide, " whilſt the inſide will be nearly in a crude ſtate, " and conſequently very unpalatable and unwhole- " ſome.—During the boiling, throwing in a little " ſalt occaſionally is found a great improvement, " and it is certain that the flower they are cooked " the better.—When boiled, pour off the water, and " evaporate the moiſture, by replacing the veſſel " in which the potatoes were boiled once more " over the fire.—This makes them remarkably " dry and mealy.—They ſhould be brought to " the table with the ſkins on, and eat with a little " ſalt,

"ſalt, as bread.—Nothing but experience can "ſatisfy any one how ſuperior the potatoe is, "thus prepared, if the ſort is good and meally.— "Some prefer roaſting potatoes; but the mode "above detailed, extracted partly from the inte- "reſting paper of Samuel Hayes, Eſquire, of "Avondale, in Ireland, (Report on the Culture "of Potatoes, p. 103.) and partly from the Lanca- "ſhire reprinted Report (p. 63.), and other com- "munications to the Board, is at leaſt equal, if "not ſuperior.—Some have tried boiling pota- "toes in ſteam, thinking by that proceſs that "they muſt imbibe leſs water.—But immerſion in "water cauſes the diſcharge of a certain ſubſtance, "which the ſteam alone is incapable of doing, "and by retaining which, the flavour of the root "is injured, and they afterwards become dry by "being put over the fire a ſecond time without "water.—With a little butter, or milk, or fiſh, "they make an excellent meſs."

Theſe directions are ſo clear, that it is hardly poſſible to miſtake them; and thoſe who follow them exactly will find their potatoes ſurpriſingly improved, and will be convinced that the manner of boiling them is a matter of much greater importance than has hitherto been imagined.

Were this method of boiling potatoes generally known in countries where theſe vegetables are only beginning to make their way into common uſe,—as in Bavaria, for inſtance,—I have no doubt but it would contribute more than any thing elſe to their ſpeedy introduction.

The following account of an experiment, lately made in one of the parishes of this metropolis (London), was communicated to me by a friend, who has permitted me to publish it.—It will serve to show,—what I am most anxious to make appear,—that the prejudices of the Poor in regard to their Food *are not unconquerable.*

"February 25th, 1796.

"The parish officers of Saint Olaves, Southwark, "desirous of contributing their aid towards lessening "the consumption of wheat, resolved on the follow- "ing succedaneum for their customary suet pudding, "which they give to their poor for dinner one day "in the week; which was ordered as follows:

	£.	s.	d.
200 lb. potatoes boiled, and skinned and mashed	0	8	0
2 gallons of milk	0	2	4
12 lb. of suet, at 4½	0	4	6
1 peck of flour	0	4	0
Baking	0	1	8
Expence	1	0	6

"Their ordinary suet-pudding had been made "thus:

	£.	s.	d.
2 Bushels of flour	1	12	0
12 lb. suet	0	4	6
Baking	0	1	8
Expence	1	18	2
Costs of the ingredients for the potatoe suet-pudding	1	0	6
Difference	0	17	8

This

This was the dinner provided for 200 perſons, who gave a decided preference to the cheapeſt of theſe preparations, and wiſh it to be continued.

The following baked potatoe-puddings were prepared in the hotel where I lodge, and were taſted by a number of perſons, who found them in general very palatable.

Baked Potatoe-puddings.

N° I.

12 ounces of potatoes, boiled, ſkinned, and maſhed;
1 ounce of ſuet;
1 ounce (or $\frac{1}{16}$ of a pint) of milk, and
1 ounce of Glouceſter cheeſe.

Total 15 ounces,—mixed with as much boiling water as was neceſſary to bring it to a due conſiſtence, and then baked in an earthern pan.

N° II.

12 ounces of maſhed potatoes as before;
1 ounce of milk, and
1 ounce of ſuet, with a ſufficient quantity of ſalt.—Mixed up with boiling water, and baked in a pan.

N° III.

12 ounces of maſhed potatoes;
1 ounce of ſuet;
1 ounce of red herrings pounded fine in a mortar.—Mixed—baked, &c. as before.

N° IV.

12 ounces of maſhed potatoes;
1 ounce of ſuet, and
1 ounce of hung beef grated fine with a grater.—Mixed and baked as before.

Theſe puddings when baked weighed from 11 to 12 ounces each.—They were all liked by thoſe who taſted them, but N° I. and N° III. ſeemed to meet with the moſt general approbation.

Receipt for a very cheap Potatoe-dumplin.

Take any quantity of potatoes, half boiled;—ſkin or pare them, and grate them to a coarſe powder with a grater; mix them up with a very ſmall quantity of flour, $\frac{1}{16}$, for inſtance, of the weight of the potatoes, or even leſs;—add a ſeaſoning of ſalt, pepper, and ſweet herbs;—mix up the whole with boiling water to a proper conſiſtency, and form the maſs into dumplins of the ſize of a large apple.—Roll the dumplins, when formed, in flour, to prevent the water from penetrating them, and put them into boiling water, and boil them till they riſe to the ſurface of the water, and ſwim, when they will be found to be ſufficiently done.

Theſe dumplins may be made very ſavoury by mixing with them a ſmall quantity of grated hung beef, or of pounded red herring.

Fried bread may likewiſe be mixed with them, and this, without any other addition, except a ſeaſoning of ſalt, forms an excellent diſh.

Upon the ſame principles upon which theſe dumplins are prepared, large boiled bag-puddings may be made; and for feeding the Poor in a public eſtabliſhment, where great numbers are to be fed, puddings, as there is leſs trouble in preparing them, are always to be preferred to dumplins.

It would ſwell this Eſſay, (which has already exceeded the limits aſſigned to it,) to the ſize of a large volume, were I to give receipts for all the good diſhes that may be prepared with potatoes.—There is, however, one method of preparing potatoes much in uſe in many parts of Germany, which appears to me to deſerve being particularly mentioned and recommended;—it is as follows:

A Receipt for preparing boiled Potatoes with a Sauce.

The potatoes being properly boiled and ſkinned, are cut into ſlices, and put into a diſh, and a ſauce, ſimilar to that commonly uſed with a fricaſeed chicken, is poured over them.

This makes an excellent and a very wholeſome diſh, but more calculated, it is true, for the tables of the opulent than for the Poor.—Good ſauces might however be compoſed for this diſh which would not be expenſive.—Common milk-porridge, made rather thicker than uſual, with wheat flour, and well ſalted, would not be a bad ſauce for it.

Potatoe Salad.

A diſh in high repute in ſome parts of Germany, and which deſerves to be particularly recommended, is a ſalad of potatoes. The potatoes being pro-

perly boiled and ſkinned, are cut into thin ſlices, and the ſame ſauce which is commonly uſed for ſalads of lettuce is poured over them; ſome mix anchovies with this ſauce, which gives it a very agreeable reliſh, and with potatoes it is remarkably palatable.

Boiled potatoes cut in ſlices and fried in butter, or in lard, and ſeaſoned with ſalt and pepper, is likewiſe a very palatable and wholeſome diſh.

Of Barley.

I have more than once mentioned the extraordinary nutritive powers of this grain, and the uſe of it in feeding the Poor cannot be too ſtrongly recommended.—It is now beginning to be much uſed in this country, mixed with wheat flour, for making bread; but it is not, I am perſuaded, in bread, but in *ſoups*, that barley can be employed to the greateſt advantage.—It is aſtoniſhing how much water a ſmall quantity of Barley-meal will thicken, and change to the conſiſtency of a jelly;—and, if my ſuſpicions with regard to the part which water acts in nutrition are founded, this will enable us to account, not only for the nutritive quality of Barley, but alſo for the ſame quality in a ſtill higher degree which ſago and ſalope are known to poſſeſs.—Sago and ſalope thicken, and change to the conſiſtency of a jelly, (and, as I ſuppoſe, prepare for decompoſition,) a greater quantity of water than Barley, and both ſago and ſalope are known to be nutritious in a very extraordinary degree.

Barley

Barley will thicken and change to a jelly much more water than any other grain with which we are acquainted, rice even not excepted;—and I have found reaſon to conclude from the reſult of innumerable experiments, which in the courſe of ſeveral years have been made under my direction in the public kitchen of the Houſe of Induſtry at Munich, that for making ſoups, Barley is by far the beſt grain that can be employed.

Were I called upon to give an opinion in regard to the comparative nutritiouſneſs of Barley-meal and wheat-flour, *when uſed in ſoups*, I ſhould not heſitate to ſay that I think the former at leaſt three or four times as nutritious at the latter.

Scotch broth is known to be one of the moſt nouriſhing diſhes in common uſe; and there is no doubt but it owes its extraordinary nutritive quality to the Scotch (or Pearl) Barley, which is always uſed in preparing it.—If the barley be omitted, the broth will be found to be poor and waſhy, and will afford little nouriſhment;—but any of the other ingredients may be retrenched;—even the meat;—without impairing very ſenſibly the nutritive quality of the Food.—Its flavour and palatableneſs may be impaired by ſuch retrenchments; but if the water be well thickened with the Barley, the Food will ſtill be very nouriſhing.

In preparing the ſoup uſed in feeding the Poor in the Houſe of Induſtry at Munich, Pearl Barley has hitherto been uſed; but I have found by ſome experiments I have lately made in London, that Pearl

Barley is by no means neceſſary, as common Barley meal will anſwer, to all intents and purpoſes, juſt as well.—In one reſpect it anſwers better, for it does not require half ſo much boiling.

In comparing cheap ſoups for feeding the Poor, the following ſhort and plain directions will be found to be uſeful:

General directions for preparing cheap Soup.

Firſt, Each portion of Soup ſhould conſiſt of *one pint* and a *quarter*, which, if the Soup be rich, will afford a good meal to a grown perſon.—Such a portion will in general weigh about *one pound* and a *quarter*, or *twenty ounces* Avoirdupois.

Secondly, the baſis of each portion of Soup ſhould conſiſt of *one ounce* and a *quarter* of Barley-meal, boiled with *one pint and a quarter of water* till the whole be reduced to the uniform conſiſtency of a thick jelly.—All other additions to the Soup do little elſe than ſerve to make it more palatable; or by rendering a long maſtication neceſſary, to increaſe and prolong the pleaſure of eating;—both theſe objects are however of very great importance, and too much attention cannot be paid to them; but both of them may, with proper management, be attained without much expence.

Were I aſked to give a Receipt for the cheapeſt Food which (in my opinion) it would be poſſible to provide in this country, it would be the following;

Receipt

Receipt for a very cheap Soup.

Take of water eight gallons, and mixing with it 5lb. of barley-meal, boil it to the conſiſtency of a thick jelly.—Seaſon it with ſalt, pepper, vinegar, ſweet herbs, and four red herrings, pounded in a mortar.—Inſtead of bread, add to it 5lb. of Indian Corn made into *Samp*, and ſtirring it together with a ladle, ſerve it up immediately in portions of 20 ounces.

Samp, which is here recommended, is a diſh ſaid to have been invented by the ſavages of North America, who have no Corn-mills.—It is Indian Corn deprived of its external coat by ſoaking it ten or twelve hours in a lixivium of water and wood-aſhes.—This coat, or huſk, being ſeparated from the kernel, riſes to the ſurface of the water, while the grain, which is ſpecifically heavier than water, remains at the bottom of the veſſel; which grain, thus deprived of its hard coat of armour, is boiled, or rather ſimmered for a great length of time, two days for inſtance, in a kettle of water placed near the fire. —When ſufficiently cooked, the kernels will be found to be ſwelled to a great ſize and burſt open, and this Food, which is uncommonly ſweet and nouriſhing, may be uſed in a great variety of ways; but the beſt way of uſing it is to mix it with milk, and with ſoups, and broths, as a ſubſtitute for bread. It is even better than bread for theſe purpoſes, for beſides being quite as palatable as the very beſt bread, as it is leſs liable than bread to grow too ſoft when mixed with theſe liquids, without

out being diſagreeably hard, it requires more maſtication, and conſequently tends more to increaſe and prolong the pleaſure of eating.

The Soup which may be prepared with the quantities of ingredients mentioned in the foregoing Receipt will be ſufficient for 64 portions, and the coſt of theſe ingredients will be as follows:

	Pence.
For 5 lb. of Barley-meal, at 1½ pence, the Barley being reckoned at the preſent very high price of it in this country, *viz.* 5s. 6d. *per* buſhel	7½
5 lb. of Indian Corn 1½ pence the pound	6½
4 red herrings	3
Vinegar	1
Salt	½
Pepper and ſweet herbs	½
Total	20½

This ſum, (20½ pence,) divided by 64, the number of portions of Soup, gives ſomething leſs than *one third of a penny* for the coſt of each portion.—But at the medium price of Barley in Great Britain, and of Indian Corn as it may be afforded here, I am perſuaded that this Soup may be provided at *one farthing* the portion of 20 ounces.

There is another kind of Soup in great repute among the poor people, and indeed among the opulent farmers, in Germany, which would not come much higher.—This is what is called *burnt Soup*, or as I ſhould rather call it, *brown Soup*, and it is prepared in the following manner:

Receipt

Receipt for making BROWN SOUP.

Take a ſmall piece of butter and put it over the fire in a clean frying-pan made of iron (not copper, for that metal uſed for this purpoſe would be poiſonous);—put to it a few ſpoonfuls of wheat or rye meal;—ſtir the whole about briſkly with a broad wooden ſpoon, or rather knife, with a broad and thin edge, till the butter has diſappeared, and the meal is uniformly of a deep brown colour; great care being taken, by ſtirring it continually, to prevent the meal from being burnt to the pan.

A very ſmall quantity of this roaſted meal, (perhaps half an ounce in weight would be ſufficient,) being put into a ſauce-pan and boiled with a pint and a quarter of water, forms a portion of Soup, which, when ſeaſoned with ſalt, pepper, and vinegar, and eaten with bread cut fine, and mixed with it at the moment when it is ſerved up, makes a kind of Food by no means unpalatable; and which is ſaid to be very wholeſome.

As this Soup may be prepared in a very ſhort time, an inſtant being ſufficient for boiling it; and as the ingredients for making it are very cheap, and may be eaſily tranſported, this food is much uſed in Bavaria by our wood-cutters, who go into the mountains, far from any habitations to fell wood.—Their proviſions for a week, (the time they commonly remain in the mountains,) conſiſt of a large loaf of rye bread (which, as it does not ſo ſoon grow dry and ſtale as wheaten bread, is always preferred to it); a linen bag containing a ſmall quantity of roaſted meal;—another ſmall bag

of

of ſalt;—and a ſmall wooden box containing ſome pounded black-pepper;—with a ſmall frying-pan of hammered iron, about ten or eleven inches in diameter, which ſerves them both as an utenſil for cooking, and as a diſh for containing the victuals when cooked.—They ſometimes, but not often, take with them a ſmall bottle of vinegar;—but *black-pepper* is an ingredient in brown Soup, which is never omitted.—Two table ſpoonfuls of roaſted meal is quite enough to make a good portion of ſoup for one perſon; and the quantity of butter neceſſary to be uſed in roaſting this quantity of meal is very ſmall, and will coſt very little.—One ounce of butter would be ſufficient for roaſting eight ounces of meal; and if half an ounce of roaſted meal is ſufficient for making one portion of Soup, the *butter* will not amount to more than $\frac{1}{16}$ of an ounce; and, at eight pence the pound, will coſt only $\frac{1}{32}$ of a penny, or $\frac{1}{8}$ of a farthing.—The coſt of the meal for a portion of this Soup is not much more conſiderable. If it be rye meal, (which is ſaid to be quite as good for roaſting as the fineſt wheat flour,) it will not coſt, in this country, even now when grain is ſo dear, more than $1\frac{1}{2}$d. *per* pound;—$\frac{1}{2}$ an ounce, therefore, the quantity required for one portion of the Soup, would coſt only $\frac{6}{32}$ of a farthing;—and the meal and butter together no more than $(\frac{1}{8} + \frac{6}{32}) = \frac{10}{32}$, or ſomething leſs than $\frac{1}{3}$ of a farthing.—If to this ſum we add the coſt of the ingredients uſed to ſeaſon the Soup, namely, for *ſalt*, *pepper*, and *vinegar*, allowing for them as much as the amount of the coſt of

the

the butter and the meal, or $\frac{1}{3}$ of a farthing, this will give $\frac{2}{3}$ of a farthing for the coſt of the ingredients uſed in preparing one portion of this Soup; but as the bread which is eaten with it is an expenſive article, this Food will not, upon the whole, be cheaper than the Soup juſt mentioned; and it is certainly neither ſo nouriſhing nor ſo wholeſome.

Brown Soup might, however, on certain occaſions, be found to be uſeful. As it is ſo ſoon cooked, and as the ingredients for making it are ſo eaſily prepared, preſerved, and tranſported from place to place; it might be uſeful to travellers, and to ſoldiers on a march. And though it can hardly be ſuppoſed to be of itſelf very nouriſhing, yet it is poſſible it may render the bread eaten with it not only more nutritive, but alſo more wholeſome;—and it certainly renders it more ſavoury and palatable.—It is the common breakfaſt of the peaſants in Bavaria; and it is infinitely preferable, in all reſpects, to that moſt pernicious waſh, *tea*, with which the lower claſſes of the inhabitants of this iſland drench their ſtomachs, and ruin their conſtitutions.

When tea is mixed with a ſufficient quantity of ſugar and good cream;—when it is taken with a large quantity of bread and butter, or with toaſt and boiled eggs;—and above all,—*when it is not drank too hot*, it is certainly leſs unwholeſome; but a ſimple infuſion of this drug, drank boiling hot, as the Poor uſually take it, is certainly a poiſon which, though it is ſometimes ſlow in its operation, never fails to produce very fatal effects, even in the ſtrongeſt

ſtrongeſt conſtitution, where the free uſe of it is continued for a conſiderable length of time.

Of Rye Bread.

The prejudice in this iſland againſt bread made of Rye, is the more extraordinary, as in many parts of the country no other kind of bread is uſed; and as the general uſe of it in many parts of Europe, for ages, has proved it to be perfectly wholeſome.—In thoſe countries where it is in common uſe, many perſons prefer it to bread made of the beſt wheat flour; and though wheaten bread is commonly preferred to it, yet I am perſuaded that the general diſlike of it, where it is not much in uſe, is more owing to its being *badly prepared*, or not well baked, than to any thing elſe.

As an account of ſome experiments upon baking Rye Bread, which were made under my immediate care and inſpection in the bake-houſe of the Houſe of Induſtry at Munich, may perhaps be of uſe to thoſe who wiſh to know how good Rye Bread may be prepared; as alſo to ſuch as are deſirous of aſcertaining, by ſimilar experiments, what, in any given caſe, the profits of a baker really are; I ſhall publiſh an account in detail of theſe experiments, in the Appendix to this volume.

I cannot conclude this Eſſay, without once more recommending, in the moſt earneſt manner, to the attention of the Public, and more eſpecially to the attention of all thoſe who are engaged in public affairs,—the ſubject which has here been attempted to be inveſtigated. It is certainly of very great importance,

importance, in whatever light it is conſidered; and it is particularly ſo at the preſent moment: *for however ſtateſmen may differ in opinion with reſpect to the danger or expediency of making any alterations in the conſtitution, or eſtabliſhed forms of government, in times of popular commotion, no doubts can be entertained with reſpect to the policy of diminiſhing, as much as poſſible, at all times,—and more eſpecially in times like the preſent,—the miſery of the lower claſſes of the people.*

END OF THE THIRD ESSAY.

ESSAY IV.

OF

CHIMNEY FIRE-PLACES,

WITH

PROPOSALS for improving them, to ſave FUEL; to render Dwelling-houſes more COMFORTABLE, and SALUBRIOUS; and effectually to prevent CHIMNIES from SMOKING.

ADVERTISEMENT.

THE Author thinks it his duty to explain the reaſons which have induced him to change the order in which the publication of his Eſſays has been announced to the Public.—Being ſuddenly called upon to ſend to Edinburgh a perſon acquainted with the method of altering Chimney Fire-places, which has lately been carried into execution in a number of houſes in London, in order to introduce theſe improvements in Scotland, he did not think it prudent to ſend any perſon on ſo important an errand, without more ample inſtructions than could well be given verbally; and being obliged to write on the ſubject, he thought it beſt to inveſtigate the matter thoroughly, and to publiſh ſuch particular directions reſpecting the improvements in queſtion as may be ſufficient to enable all thoſe, who may be deſirous of adopting them, to make, or direct the neceſſary alterations in their Fire-places without any further aſſiſtance.

The following Letter, which the Author received from Sir John Sinclair, Baronet, Member of Par-

liament, and Preſident of the Board of Agriculture, will explain this matter more fully:

" You will hear with pleaſure that your mode " of altering Chimnies, ſo as to prevent their " ſmoking, to ſave fuel, and to augment heat, " has anſwered not only with me, but with " many of my friends who have tried it; and that " the Lord Provoſt and Magiſtrates of Edinburgh " have voted a ſum of money to defray the ex- " pences of a bricklayer, who is to be ſent there " for the purpoſe of eſtabliſhing the ſame plan in " that city. I hope that you will have the good- " neſs to expedite your paper upon the manage- " ment of Heat, that the knowledge of ſo uſeful " an art may be as rapidly and as extenſively dif- " fuſed as poſſible.—With my beſt wiſhes for your " ſucceſs in the various important purſuits in which " you are now engaged, believe me, with great " truth and regard,

" Your faithful and
" obedient ſervant,
" JOHN SINCLAIR."

Whitehall, London,
9th February, 1796.

ESSAY IV.

CHAP. I.

Fire-places for burning Coals, or Wood, in an open Chimney, are capable of great Improvement.—Smoking Chimnies may in all Caſes be completely cured.—The immoderate Size of the Throats of Chimnies the principal Cauſe of all their Imperfections.—Philoſophical Inveſtigation of the Subject.—Remedies propoſed for all the Defects that have been diſcovered in Chimnies and their open Fire-places.—Theſe Remedies applicable to Chimnies deſtined for burning Wood, or Turf, as well as thoſe conſtructed for burning Coals.

THE plague of a ſmoking Chimney is proverbial; but there are many other very great defects in open Fire-places, as they are now commonly conſtructed in this country, and indeed throughout Europe, which, being leſs obvious, are ſeldom attended to; and there are ſome of them very fatal in their conſequences to health; and, I am perſuaded, coſt the lives of thouſands every year in this iſland.

Thoſe cold and chilling draughts of air on one ſide of the body, while the other ſide is ſcorched by a Chimney fire, which every one who reads this muſt often have felt, cannot but be highly

detrimental to health; and in weak and delicate conſtitutions muſt often produce the moſt fatal effects.—I have not a doubt in my own mind that thouſands die in this country every year of conſumptions occaſioned ſolely by this cauſe.—By a cauſe which might be ſo eaſily removed!—by a cauſe, the removal of which would tend to promote comfort and convenience in ſo many ways!

Strongly impreſſed as my mind is with the importance of this ſubject, it is not poſſible for me to remain ſilent.—The ſubject is too nearly connected with many of the moſt eſſential enjoyments of life not to be highly intereſting to all thoſe who feel pleaſure in promoting, or in contemplating, the comfort and happineſs of mankind.—And without ſuffering myſelf to be deterred either by the fear of being thought to give to the ſubject a degree of importance to which it is not entitled; or by the apprehenſion of being tireſome to my readers by the prolixity of my deſcriptions;—I ſhall proceed to inveſtigate the ſubject, in all its parts and details, with the utmoſt care and attention.—And firſt with regard to ſmoking Chimnies:

There are various cauſes by which Chimnies may be prevented from carrying ſmoke; but there are none that may not eaſily be diſcovered, and completely removed.—This will doubtleſs be conſidered as a bold aſſertion; but I truſt I ſhall be able to make it appear, in a manner perfectly ſatisfactory to my readers, that I have not ventured to give this opinion but upon good and ſufficient grounds.

Thoſe who will take the trouble to conſider the nature and properties of elaſtic fluids,—of air,—

ſmoke,—and vapour,—and to examine the laws of their motions, and the neceſſary conſequences of their being rarified by heat, will perceive that it would be as much a miracle if ſmoke ſhould not *riſe* in a Chimney, (all hindrances to its aſcent being removed,) as that water ſhould refuſe to run in a ſyphon, or to *deſcend* in a river.

The whole myſtery, therefore, of curing ſmoking Chimnies is compriſed in this ſimple direction,—*find out and remove thoſe local hindrances which forcibly prevent the ſmoke from following its natural tendency to go up the Chimney*; or rather, to ſpeak more accurately, which prevents its being forced up the Chimney by the preſſure of the heavier air of the room.

Although the cauſes by which the aſcent of ſmoke in a Chimney *may be* obſtructed, are various, yet that cauſe which will moſt commonly, and I may ſay, almoſt univerſally, be found to operate, is one which it is always very eaſy to diſcover, and as eaſy to remove,—the bad conſtruction of the Chimney *in the neighbourhood of the Fire-place.*

In the courſe of all my experience and practice in curing ſmoking Chimnies, and I certainly have not had leſs than five hundred under my hands, and among them many which were thought to be quite incurable,—I have never been obliged, except in one ſingle inſtance, to have recourſe to any other method of cure than merely reducing the Fire-place and the throat of the Chimney, or that part of it which lies immediately above the Fire-place, to a proper form, and to juſt dimenſions.

That my principles for conſtructing Fire-places are equally applicable to thoſe which are deſigned for burning coal, as to thoſe in which wood is burnt, has lately been abundantly proved by experiments made here in London; for of above an hundred and fifty Fire-places which have been altered in this city, under my direction, within theſe laſt two months, there is not one which has not anſwered perfectly well *.—And by ſeveral experiments which have been made with great care, and with the aſſiſtance of thermometers, it has been demonſtrated, that the ſaving of fuel, ariſing from theſe improvements of Fire-places, amounts in all caſes to more than *half*, and in many caſes to more

* Eves and Sutton, bricklayers, Broad Sanctuary, Weſtminſter, have alone altered above 90 Chimnies.—The experiment was firſt made in London at Lord Palmerſton's houſe in Hanover-ſquare;—then two Chimnies were altered in the houſe of Sir John Sinclair, Baronet, Preſident of the Board of Agriculture; one in the room in which the Board meets, and the other in the Secretary's room; which laſt being much frequented by perſons from all parts of Great Britain, it was hoped that circumſtance would tend much to expedite the introduction of theſe improvements in various parts of the kingdom. Several Chimnies were then altered in the houſe of Sir Joſeph Banks, Baronet, K. B. Preſident of the Royal Society. Afterwards a number were altered in Devonſhire-houſe;—in the houſe of Earl Beſborough in Cavendiſh-ſquare, and at his ſeat at Rochampton;—at Holywell-houſe, near St. Alban's, the ſeat of the Counteſs Dowager Spencer;—at Melbourne-houſe;—at Lady Templeton's in Portland-place;—at Mrs. Montague's in Portman-ſquare; at Lord Sudley's in Dover-ſtreet;—at the Marquis of Saliſbury's ſeat at Hatfield, and at his houſe in town;—at Lord Palmerſton's ſeat at Broadlands, near Southampton, and at ſeveral gentlemen's houſes in that neighbourhood;—and a great many others: but it would be tireſome to enumerate them all; and even theſe are mentioned merely for the ſatisfaction of thoſe who may wiſh to make inquiries reſpecting the ſucceſs of the experiments.

than

than *two-thirds* of the quantity formerly conſumed. —Now as the alterations in Fire-places which are neceſſary may be made at a very trifling expence, as any kind of grate or ſtove may be made uſe of, and as no iron work, but merely a few bricks and ſome mortar, or a few ſmall pieces of fire-ſtone, are required; the improvement in queſtion is very important, when conſidered merely with a view to economy; but it ſhould be remembered that not only a great ſaving is made of fuel by the alterations propoſed, but that rooms are made much more comfortable, and more ſalubrious;—that they may be more equally warmed, and more eaſily kept at any required temperature;—that all draughts of cold air from the doors and windows towards the Fire-place, which are ſo fatal to delicate conſtitutions, will be completely prevented;—that in conſequence of the air being equally warm all over the room, or in all parts of it, it may be entirely changed with the greateſt facility, and the room completely ventilated, when this air is become unfit for reſpiration, and this merely by throwing open for a moment a door opening into ſome paſſage from whence freſh air may be had, and the upper part of a window; or by opening the upper part of one window and the lower part of another. And as the operation of ventilating the room, even when it is done in the moſt complete manner, will never require the door and window to be open more than one minute; in this ſhort time the walls of the room will not be ſenſibly cooled, and the freſh air which comes into the room will, in a very

few

few minutes, be ſo completely warmed by theſe walls, that the temperature of the room, though the air in it be perfectly changed, will be brought to be very nearly the ſame as it was before the ventilation.

Thoſe who are acquainted with the principles of pneumatics, and know why the warm air in a room ruſhes out at an opening made for it at the top of a window when colder air from without is permitted to enter by the door, or by any other opening ſituated lower than the firſt, will ſee, that it would be quite impoſſible to ventilate a room in the complete and expeditious manner here deſcribed, where the air in a room is partially warmed, or hardly warmed at all, and where the walls of the room, remote from the fire, are conſtantly cold; which muſt always be the caſe where, in conſequence of a ſtrong current up the Chimney, ſtreams of cold air are continually coming in through all the crevices of the doors and windows, and flowing into the Fire-place.

But although rooms, furniſhed with Fire-places conſtructed upon the principles here recommended, may be eaſily and moſt effectually ventilated, (and this is certainly a circumſtance in favour of the propoſed improvements,) yet ſuch total ventilations will very ſeldom, if ever, be neceſſary.—As long as *any fire* is kept up in the room, there is ſo conſiderable a current of air up the Chimney, notwithſtanding all the reduction that can be made in the ſize of its throat, that the continual change of air in the room which this current occaſions will, generally, be found to be quite ſufficient for keeping

keeping the air in the room ſweet and wholeſome; and indeed in rooms in which there is no open Fire-place, and conſequently no current of air from the room ſetting up the Chimney, which is the caſe in Germany, and all the northern parts of Europe, where rooms are heated by ſtoves, whoſe Fire-places opening without, are not ſupplied with the air neceſſary for the combuſtion of the fuel from the room;—and although in moſt of the rooms abroad, which are ſo heated, the windows and doors are double, and both are cloſed in the moſt exact manner poſſible, by ſlips of paper paſted over the crevices, or by ſlips of liſt or furr; yet, when theſe rooms are tolerably large, and when they are not very much crowded by company, nor filled with a great many burning lamps or candles, the air in them is ſeldom ſo much injured as to become oppreſſive or unwholeſome; and thoſe who inhabit them ſhow by their ruddy countenances, as well as by every other ſign of perfect health, that they ſuffer no inconvenience whatever from their cloſeneſs.

There is frequently, it is true, an oppreſſiveneſs in the air of a room heated by a German ſtove, of which thoſe who are not much accuſtomed to living in thoſe rooms ſeldom fail to complain, and indeed with much reaſon; but this oppreſſiveneſs does not ariſe from the air of the room being injured by the reſpiration and perſpiration of thoſe who inhabit it;—it ariſes from a very different cauſe;—from a fault in the conſtruction of German ſtoves in general, but which may be eaſily and moſt completely remedied, as I ſhall ſhow

ſhow more fully in another place. In the mean time, I would juſt obſerve here with regard to theſe ſtoves, that as they are often made of iron, and as this metal is a very good conductor of heat, ſome part of the ſtove in contact with the air of the room becomes ſo hot as to calcine or rather to *roaſt* the duſt which lights upon it; which never can fail to produce a very diſagreeable effect on the air of the room. And even when the ſtove is conſtructed of pantiles or pottery ware, if any part of it in contact with the air of the room is ſuffered to become very hot, which ſeldom fails to be the caſe in German ſtoves conſtructed on the common principles, nearly the ſame effects will be found to be produced on the air as when the ſtove is made of iron, as I have very frequently had occaſion to obſerve.

Though a room be cloſed in the moſt perfect manner poſſible, yet, as the quantity of air injured and rendered unfit for further uſe by the reſpiration of two or three perſons in a few hours is very ſmall, compared to the immenſe volume of air which a room of a moderate ſize contains; and as a large quantity of freſh air always enters the room, and an equal quantity of the warm air of the room is driven out of it every time the door is opened, there is much leſs danger of the air of a room becoming unwholeſome for the want of ventilation than has been generally imagined; particularly in cold weather, when all the different cauſes which conſpire to change the air of warmed rooms act with increaſed power and effect.

Thoſe

Thoſe who have any doubts reſpecting the very great change of air or ventilation which takes place each time the door of a warm room is opened in cold weather, need only ſet the door of ſuch a room wide open for a moment, and hold two lighted candles in the door-way, one near the top of the door, and the other near the bottom of it; the violence with which the flame of that above will be driven outwards, and that below inwards, by the two ſtrong currents of air which, paſſing in oppoſite directions, ruſh in and out of the room at the ſame time, will be convinced that the change of air which actually takes place muſt be very conſiderable indeed; and theſe currents will be ſtronger, and conſequently the change of air greater, in proportion as the difference is greater between the temperatures of the air within the room and of that without.

I have been more particular upon this ſubject,—the ventilation of warmed rooms which are conſtantly inhabited,—as I know that people in general in this country have great apprehenſions of the bad conſequences to health of living in rooms in which there is not a continual influx of cold air from without. I am as much an advocate for a *free circulation* of air as any body, and always ſleep in a bed without curtains on that account; but I am much inclined to think that the currents of cold air which never fail to be produced in rooms heated by Fire-places conſtructed upon the common principle,—thoſe partial heats on one ſide of the body, and cold blaſts on the other, ſo often felt in houſes in this country, are infinitely more

more detrimental to health than the ſuppoſed cloſeneſs of the air in a room warmed more equally, and by a ſmaller fire.

All theſe advantages, attending the introduction of the improvements in Fire-places here recommended, are certainly important, and I do not know that they are counterbalanced by any one diſadvantage whatſoever. The only complaint that I have ever heard made againſt them was, that they made the rooms *too* warm; but the remedy to this evil is ſo perfectly ſimple and obvious, that I ſhould be almoſt afraid to mention it, leſt it might be conſidered as an inſult to the underſtanding of the perſon to whom ſuch information ſhould be given; for nothing ſurely can be conceived more perfectly ridiculous than the embarraſſment of a perſon on account of the too great heat of his room, when it is in his power to diminiſh *at pleaſure* the fire by which it is warmed; and yet, ſtrange as it may appear, this has ſometimes happened!

Before I proceed to give directions for the conſtruction of Fire-places, it will be proper to examine more carefully the Fire-places now in common uſe;—to point out their faults;—and to eſtabliſh the principles upon which Fire-places ought to be conſtructed.

The great fault of all the open Fire-places, or Chimnies, for burning wood or coals in an open fire, now in common uſe, is, that they are much too large; or rather it is *the throat of the Chimney*, or the lower part of its open canal, in the neighbourhood of the mantle, and immediately over

over the fire, which is too large. This opening has hitherto been left larger than otherwiſe it probably would have been made, in order to give a paſſage to the Chimney-ſweeper; but I ſhall ſhow hereafter how a paſſage for the Chimney-ſweeper may be contrived without leaving the throat of the Chimney of ſuch enormous dimenſions as to ſwallow up and devour all the warm air of the room, inſtead of merely giving a paſſage to the ſmoke and heated vapour which riſe from the fire, for which laſt purpoſe alone it ought to be deſtined.

Were it my intention to treat my ſubject in a formal ſcientific manner, it would doubtleſs be proper, and even neceſſary, to begin by explaining in the fulleſt manner, and upon the principles founded on the laws of nature, relative to the motions of elaſtic fluids, as far as they have been diſcovered and demonſtrated, the cauſes of the aſcent of ſmoke; and alſo to explain and illuſtrate upon the ſame principles, and even to meaſure, or eſtimate by calculations, the preciſe effects of all thoſe mechanical aids which may be propoſed for aſſiſting it in its aſcent, or rather for removing thoſe obſtacles which hinder its motion upwards;—but, as it is my wiſh rather to write an uſeful practical treatiſe, than a learned diſſertation, being more deſirous to contribute in diffuſing uſeful knowledge, by which the comforts and enjoyments of mankind may be increaſed, than to acquire the reputation of a philoſopher among learned men, I ſhall endeavour to write in ſuch a manner as to be eaſily underſtood *by thoſe who are moſt likely to profit by the information*

ation I have to communicate, and conſequently moſt likely to aſſiſt in bringing into general uſe the improvements I recommend. This being premiſed, I ſhall proceed, without any farther preface or introduction, to the inveſtigation of the ſubject I have undertaken to treat.

As the immoderate ſize of the throats of Chimnies is the great fault of their conſtruction, it is this fault which ought always to be firſt attended to in every attempt which is made to improve them; for however perfect the conſtruction of a Fire-place may be in other reſpects, if the opening left for the paſſage of the ſmoke is larger than is neceſſary for that purpoſe, nothing can prevent the warm air of the room from eſcaping through it; and whenever this happens, there is not only an unneceſſary loſs of heat, but the warm air which leaves the room to go up the chimney being replaced by cold air from without, the draughts of cold air, ſo often mentioned, cannot fail to be produced in the room, to the great annoyance of thoſe who inhabit it. But although both theſe evils may be effectually remedied by reducing the throat of the Chimney to a proper ſize, yet in doing this ſeveral precautions will be neceſſary. And firſt of all, the throat of the Chimney ſhould be in its proper place; that is to ſay, in that place in which it ought to be, in order that the aſcent of the ſmoke may be moſt facilitated; for every means which can be employed for facilitating the aſcent of the ſmoke in the Chimney muſt naturally tend to prevent the Chimney

ney from ſmoking; now as the ſmoke and hot vapour which riſe from a fire naturally tend *upwards*, the proper place for the throat of the Chimney is evidently perpendicularly *over the fire.*

But there is another circumſtance to be attended to in determining the proper place for the throat of a Chimney, and that is, to aſcertain its diſtance from the fire, or *how far* above the burning fuel it ought to be placed. In determining this point, there are many things to be conſidered, and ſeveral advantages and diſadvantages to be weighed and balanced.

As the ſmoke and vapour which aſcend from burning fuel riſe in conſequence of their being rarefied by heat, and made lighter than the air of the ſurrounding atmoſphere; and as the degree of their rarefaction, and conſequently their tendency to riſe, is in proportion to the intenſity of their heat; and further, as they are hotter near the fire than at a greater diſtance from it, it is clear that the nearer the throat of a Chimney is to the fire, the ſtronger will be, what is commonly called, its *draught*, and the leſs danger there will be of its ſmoking; or of duſt coming into the room when the fire is ſtirred. But, on the other hand, when the draught of a Chimney is *very ſtrong*, and particularly when this ſtrong draught is occaſioned by the throat of the Chimney being very near the fire, it *may* ſo happen that the draught of air into the fire may become ſo ſtrong, as to cauſe the fuel to be conſumed too rapidly: This, however, will very ſeldom be found to be the caſe, for the throats of Chimnies are in general too high; and it would even be difficult to make them too low.

In introducing the improvements propoſed in Chimnies *already built*, there can be no doubt in regard to the height of the throat of the Chimney, for its place will be determined by the height of the mantle. It can hardly be made lower than the mantle; and *it ought always to be brought down as nearly upon the level with the bottom of it as poſſible.* If the Chimney is apt to ſmoke, it will ſometimes be abſolutely neceſſary either to lower the mantle; or to diminiſh the height of the opening of the Fire-place, by putting in a ſtraight piece of ſtone from one ſide of it to the other; or, which will be ſtill more ſimple and eaſy in practice, building a wall of bricks, ſupported by a flat bar of iron, immediately under the mantle.

In moſt caſes this will be found not only uſeful but neceſſary; for nothing is ſo effectual to prevent Chimnies from ſmoking, as *diminiſhing the opening of the Fire-place in front*, in the manner here deſcribed, and *lowering* and *diminiſhing* the throat of the Chimney; and I have always found, except in the ſingle inſtance already mentioned, that a perfect cure may be effected by *theſe means alone*, even in the moſt deſperate caſes.

It is true, that when the conſtruction of the Chimney is very bad indeed, or its ſituation very unfavourable to the aſcent of the ſmoke, and eſpecially when both theſe diſadvantages exiſt at the ſame time, it may ſometimes be neceſſary to diminiſh the opening of the Fire-place, and particularly to lower it, and alſo to lower the throat of the Chimney, more than might be wiſhed: but ſtill I think this can produce no inconveniences to be compared with that greateſt of all plagues, a ſmoking Chimney.

The poſition of the throat of a Chimney being determined, the next points to be aſcertained are its ſize and form, and the manner in which it ought to be connected with the Fire-place below, and with the open canal of the Chimney above.

But as theſe inveſtigations are intimately connected with thoſe which relate to the form proper to be given to the Fire-place itſelf, we muſt conſider them all together.

That theſe inquiries may be purſued with due method, and that the concluſions drawn from them may be clear and ſatisfactory, it will be neceſſary to conſider, firſt, what the objects are which ought principally to be had in view in the conſtruction of a Fire-place; and ſecondly, to ſee how theſe objects can beſt be attained.

Now the deſign of a Chimney Fire being ſimply to warm a room, it is neceſſary, firſt of all, to contrive matters ſo that the room ſhall be actually warmed; ſecondly, that it be warmed with the ſmalleſt expence of fuel poſſible; and, thirdly, that in warming it, the air of the room be preſerved perfectly pure, and fit for reſpiration, and free from ſmoke and all diſagreeable ſmells.

In order to take meaſures with certainty for warming a room by means of an open Chimney Fire, it will be neceſſary to conſider *how*, or in *what manner*, ſuch a Fire communicates heat to a room. This queſtion may perhaps, at the firſt view of it, appear to be ſuperfluous and trifling, but a more careful examination of the matter will

ſhow it to be highly deſerving of the moſt attentive inveſtigation.

To determine in *what manner* a room is heated by an open Chimney Fire, it will be neceſſary firſt of all to find out, *under what form* the heat generated in the combuſtion of the fuel exiſts, and then to ſee how it is communicated to thoſe bodies which are heated by it.

In regard to the firſt of theſe ſubjects of inquiry, it is quite certain that the heat which is generated in the combuſtion of the fuel exiſts under *two* perfectly diſtinct and very different forms. One part of it is *combined* (or rather *mixed*) with the ſmoke, vapour, and heated air, which riſe from the burning fuel, and goes off with them into the upper regions of the atmoſphere; while the other part, which appears to be *uncombined*, or, as ſome ingenious philoſophers have ſuppoſed, combined only with light, is ſent off from the fire in rays in all poſſible directions.

With reſpect to the ſecond ſubject of inquiry, namely, how this heat, exiſting under theſe two different forms, is communicated to other bodies; it is highly probable that the combined heat can only be communicated to other bodies by *actual contact* with the body with which it is combined; and with regard to the rays which are ſent off by burning fuel, it is certain that *they* communicate or generate heat only *when* and *where* they are ſtopped or abſorbed. In paſſing through air, which is *tranſparent*, they certainly do not communicate any heat to it; and it ſeems highly probable that

that they do not communicate heat to ſolid bodies by which they are reflected.

In theſe reſpects they ſeem to bear a great reſemblance to the ſolar rays. But in order not to diſtract the attention of my reader, or carry him too far away from the ſubject more immediately under conſideration, I muſt not enter too deeply into theſe inquiries reſpecting the nature and properties of what has been called *radiant heat.* It is certainly a moſt curious ſubject of philoſophical inveſtigation, but more time would be required to do it juſtice than we now have to ſpare. We muſt therefore content ourſelves with ſuch a partial examination of it as will be ſufficient for our preſent purpoſe.

A queſtion which naturally preſents itſelf here is, What proportion does the radiant heat bear to the combined heat?—Though that point has not yet been determined with any conſiderable degree of preciſion, it is, however, quite certain that the quantity of heat which goes off combined with the ſmoke, vapour, and heated air, is much more conſiderable, perhaps three or four times greater at leaſt, than that which is ſent off from the fire in rays.—And yet, ſmall as the quantity is of this radiant heat, it is the only part of the heat generated in the combuſtion of fuel burnt in an open Fire-place which is ever employed, or which can ever be employed, in heating a room.

The whole of the combined heat eſcapes by the Chimney, and is totally loſt; and, indeed, no part of it could ever be brought into a room from an open Fire-place, without bringing along

with it the ſmoke with which it is combined; which, of courſe, would render it impoſſible for the room to be inhabited.

There is, however, one method by which combined heat, and even that which ariſes from an open Fire-place, may be made to aſſiſt in warming a room; and that is by making it paſs through ſomething analogous to a German ſtove, placed in the Chimney above the fire.—But of this contrivance I ſhall take occaſion to treat more fully hereafter; in the mean time I ſhall continue to inveſtigate the properties of open Chimney Fire-places, conſtructed upon the moſt ſimple principles, ſuch as are now in common uſe; and ſhall endeavour to point out and explain all thoſe improvements of which *they* appear to me to be capable.

When fuel is burnt in Fire-places upon this ſimple conſtruction, where the ſmoke eſcapes immediately by the open canal of the Chimney, it is quite evident that all the combined heat muſt of neceſſity be loſt; and as it is the *radiant heat* alone which can be employed in heating a room, it becomes an object of much importance to determine how the greateſt quantity of it may be generated in the combuſtion of the fuel; and how the greateſt proportion poſſible of that which is generated may be brought into the room.

Now the quantity of radiant heat generated in the combuſtion of a given quantity of any kind of fuel depends very much upon the management of the fire, or upon the manner in which the fuel is conſumed. When the fire burns bright, much radiant heat will be ſent off from it; but

but when it is *ſmothered up*, very little will be generated; and indeed very little combined heat, that can be employed to any uſeful purpoſe: moſt of the heat produced will be immediately *expended* in giving elaſticity to a thick denſe vapour or ſmoke which will be ſeen riſing from the fire;—and the combuſtion being very incomplete, a great part of the inflammable matter of the fuel being merely rarefied and driven up the Chimney without being inflamed, the fuel will be waſted to little purpoſe. And *hence it appears of how much importance it is, whether it be conſidered with a view to economy, or to cleanlineſs, comfort, and elegance, to pay due attention to the management of a Chimney Fire.*

Nothing can be more perfectly void of common ſenſe, and waſteful and ſlovenly at the ſame time, than the manner in which Chimney Fires, and particularly where coals are burned, are commonly managed by ſervants. They throw on a load of coals at once, through which the flame is hours in making its way; and frequently it is not without much trouble that the fire is prevented from going quite out. During this time no heat is communicated to the room: and what is ſtill worſe, the throat of the Chimney being occupied merely by a heavy denſe vapour, not poſſeſſed of any conſiderable degree of heat, and conſequently not having much elaſticity, the warm air of the room finds leſs difficulty in forcing its way up the Chimney and eſcaping, than when the fire burns bright;—and it happens not unfrequently, eſpe-

cially in Chimnies and Fire-places ill conſtructed, that this current of warm air from the room which preſſes into the Chimney, croſſing upon the current of heavy ſmoke which riſes ſlowly from the fire, obſtructs it in its aſcent, and beats it back into the room; hence it is that Chimnies ſo often ſmoke when too large a quantity of freſh coals is put upon the fire.

So many coals ſhould never be put on the fire at once as to prevent the free paſſage of the flame between them. In ſhort, a fire ſhould never be *ſmothered;* and when proper attention is paid to the quantity of coals put on, there will be very little uſe for the poker; and this circumſtance will contribute very much to cleanlineſs, and to the preſervation of furniture.

Thoſe who have feeling enough to be made miſerable by any thing careleſs, ſlovenly, and waſteful, which happens under their eyes,—who know what comfort is, and conſequently are worthy of the enjoyments of a *clean hearth* and a *cheerful fire*, ſhould really either take the trouble themſelves to manage their fires, (which, indeed, would rather be an amuſement to them than a trouble,) or they ſhould inſtruct their ſervants to manage them better.

But to return to the ſubject more immediately under conſideration. As we have ſeen what is neceſſary to the production or generation of radiant heat, it remains to determine how the greateſt proportion of that generated and ſent off from the fire in all directions may be made to enter the room,

room, and aſſiſt in warming it. Now as the rays which are thrown off from burning fuel have this property in common with light, that they generate heat only *when* and *where* they are ſtopped, or abſorbed; and alſo in being capable of being reflected *without generating heat* at the ſurfaces of various bodies, the knowledge of theſe properties will enable us to take meaſures, with the utmoſt certainty, for producing the effect required, —that is to ſay, for bringing as much radiant heat as poſſible into the room.

This muſt be done, firſt, by cauſing as many as poſſible of the rays, as they are ſent off from the fire in ſtraight lines, to come *directly* into the room; which can only be effected by bringing the fire as far forward, and leaving the opening of the Fire-place as wide and as high as can be done without inconvenience; and ſecondly, by making the ſides and back of the Fire-place of ſuch form, and conſtructing them of ſuch materials, as to cauſe the direct rays from the fire, which ſtrike againſt them, to be ſent into the room *by reflection* in the greateſt abundance.

Now it will be found, upon examination, that the beſt form for the vertical ſides of a Fire-place, or the *covings*, (as they are called,) is that of an upright plane, making an angle with the plane of the back of the Fire-place, of about 135 degrees.——According to the preſent conſtruction of Chimnies this angle is 90 degrees, or forms a right angle; but as in this caſe the two ſides or covings of the Fire-place

(AC,

(AC, BD, Fig. 1.) are parallel to each other, it is evident that they are very ill contrived for throwing into the room by reflection, the rays from the fire which fall on them.

To have a clear and perfect idea of the alterations I propose in the forms of Fire-places, the reader need only observe, that, whereas the backs of Fire-places, as they are now commonly constructed, are as wide as the opening of the Fire-place in front, and the sides of it are of course perpendicular to it, and parallel to each other,—in the Fire-places I recommend, the back (*i k*, Fig. 3.) is only about one-third of the width of the opening of the Fire-place in front (*a b*), and consequently that the two sides or covings of the Fire-place (*a i* and *b k*), instead of being perpendicular to the back, are inclined to it at an angle of about 135 degrees; and in consequence of this position, instead of being parallel to each other, each of them presents an oblique front towards the opening of the Chimney, by means of which the rays which they reflect are thrown into the room. A bare inspection of the annexed drawings (Fig. 1. and Fig. 3.) will render this matter perfectly clear and intelligible.

In regard to the materials which it will be most advantageous to employ in the construction of Fire-places, so much light has, I flatter myself, already been thrown on the subject we are investigating, and the principles adopted have been established on such clear and obvious facts, that no great difficulty will attend the determination of that point.—

point.—As the object in view is to bring radiant heat into the room, it is clear that that material is beſt for the conſtruction of a Fire-place which reflects the moſt, or which *abſorbs the leaſt* of it; for that heat which is *abſorbed* cannot be *reflected*.—Now as bodies which abſorb radiant heat are neceſſarily heated in conſequence of that abſorption, to diſcover which of the various materials that can be employed for conſtructing Fire-places are beſt adapted for that purpoſe, we have only to find out by an experiment, very eaſy to be made, what bodies acquire *leaſt heat* when expoſed to the direct rays of a clear fire;—for thoſe which are leaſt heated, evidently abſorb the leaſt, and conſequently reflect the moſt radiant heat. And hence it appears that iron, and, in general, metals of all kinds, which are well known to *grow very hot* when expoſed to the rays projected by burning fuel, are to be reckoned among the *very worſt* materials that it is poſſible to employ in the conſtruction of Fire-places.

The beſt materials I have hitherto been able to diſcover are fire-ſtone, and common bricks and mortar. Both theſe materials are, fortunately, very cheap; and as to their comparative merits, I hardly know to which of them the preference ought to be given.

When bricks are uſed, they ſhould be covered with a thin coating of plaſter, which, when it is become perfectly dry, ſhould be white-waſhed. The fire-ſtone ſhould likewiſe be white-waſhed, when that is uſed; and every part of the Fire-place, which does not come into actual contact with the burning fuel,

fuel, and is not expoſed to being ſoiled and made black by the ſmoke, ſhould be kept as white and clean as poſſible. As *white* reflects more heat, as well as more light than any other colour, it ought always to be preferred for the inſide of a Chimney Fire-place, and *black*, which reflects neither light nor heat, ſhould be moſt avoided.

I am well aware how much the opinion I have here ventured to give, reſpecting the unfitneſs of iron and other metals to be employed in the conſtruction of open Fire-places, differs from the opinion generally received upon that ſubject;—and I even know that the very reaſon which, according to my ideas of the matter, renders them totally unfit for the purpoſe, is commonly aſſigned for making uſe of them, namely, that they ſoon grow very hot. But I would beg leave to aſk what advantage is derived from heating them?

I have ſhewn the diſadvantage of it, namely, that the quantity of radiant heat thrown into the room is diminiſhed;—and it is eaſy to ſhow that almoſt the whole of that abſorbed by the metal is ultimately carried up the Chimney by the air, which, coming into contact with this hot metal, is heated and rarefied by it, and forcing its way upwards, goes off with the ſmoke; and as no current of air ever ſets from any part of the opening of a Fire-place into the room, it is impoſſible to conceive how the heat exiſting in the metal compoſing any part of the apparatus of the Fire-place, and ſituated within its cavity, can come, or be brought into the room.

This difficulty may be in part removed, by ſuppoſing, what indeed ſeems to be true in a certain degree,

degree, that the heated metal ſends off in rays the heat it acquires from the fire, even when it is not heated red hot; but ſtill, as it never can be admitted that the heat, abſorbed by the metal and afterwards thrown off by it in rays, is *increaſed* by this operation, nothing can be gained by it; and as much muſt neceſſarily be loſt in conſequence of the great quantity of heat communicated by the hot metal to the air in contact with it, which, as has already been ſhewn, always makes its way up the Chimney, and flies off into the atmoſphere, the loſs of heat attending the uſe of it is too evident to require being farther inſiſted on.

There is, however, in Chimney Fire-places deſtined for burning coals, one eſſential part, the grate, or rather the front bars and bottom of it, which cannot well be made of any thing elſe but iron; but the back and ſides of a grate ſhould always be made of five bricks laid in mortar made of clay and brick-duſt, and there is certainly no neceſſity whatever for that immenſe quantity of iron which ſurrounds grates as they are now commonly conſtructed and fitted up, and which not only renders them very expenſive, but injures very eſſentially the Fire-place.

Thoſe who have not ſeen the experiment made can have no idea how much better, clearer, and brighter a coal fire, or a wood fire, burns in a grate, the ſides and back of which are brick, or fire-ſtone, than in one whoſe ſides and back are of iron. The metal being a conductor of heat, the heat of that part of the fuel that happens to touch it is carried off by it, and the fuel being cooled, the fire goes out, or burns very dull; but when the fire burns againſt

againſt bricks, the ſurface of the bricks very ſoon grows red hot, which not only cauſes the fire to burn clear and bright, but increaſes very much the quantity of radiant heat ſent off into the room.

Where it is neceſſary to diminiſh the opening of a large Chimney in order to prevent its ſmoking, or for any other purpoſe, it is much more ſimple, economical, and better in all reſpects, to do this with marble, fire-ſtone, or even with bricks and mortar, than to make uſe of iron, which, as has already been ſhewn, is the very worſt material that can poſſibly be employed for that purpoſe; and as to regiſters, they not only are quite unneceſſary, where the throat of a Chimney is properly conſtructed, and of proper dimenſions, but in that caſe would do much harm. If they act at all, it muſt be by oppoſing their flat ſurfaces to the current of riſing ſmoke in a manner which cannot fail to embarraſs and impede its motion. But we have ſhown that the paſſage of the ſmoke through the throat of a Chimney ought to be facilitated as much as poſſible, in order that it may be enabled to paſs by a ſmall aperture.

Regiſter-ſtoves have often been found to be of uſe, but it is becauſe the great fault of all Fire-places conſtructed upon the common principles being the enormous dimenſions of the opening of the fire-place in front, and of the throat of the Chimney, theſe faults have been in ſome meaſure corrected by them; but I will venture to affirm, that there never was a Fire-place ſo corrected, that would not have been much more improved, and with infinitely leſs expence, by the alterations here recommended, and which will be more particularly explained in the next Chapter.

CHAP. II.

Practical Directions deſigned for the Uſe of Workmen, ſhowing how they are to proceed in making the Alterations neceſſary to improve Chimney Fire-places, and effectually to cure ſmoking Chimnies.

ALL Chimney Fire-places, without exception, whether they are deſigned for burning wood or coals, and even thoſe which do not ſmoke, as well as thoſe which do, may be greatly improved by making the alterations in them here recommended; for it is by no means *merely* to prevent Chimnies from ſmoking that theſe improvements are recommended, but it is alſo to make them better in all other reſpects as Fire-places; and when the alterations propoſed are properly executed, which may very eaſily be done with the aſſiſtance of the following plain and ſimple directions, the Chimnies will never fail to anſwer, I will venture to ſay, even beyond expectation. The room will be heated much more equally and more pleaſantly with *leſs than half the fuel* uſed before, the fire will be more cheerful and more agreeable; and the general appearance of the Fire-place more neat and elegant, and the Chimney *will never ſmoke.*

The

The advantages which are derived from mechanical inventions and contrivances are, I know, frequently accompanied by diſadvantages which it is not always poſſible to avoid; but in the caſe in queſtion, I can ſay with truth, that I know of no diſadvantage whatever that attends the Fire-places conſtructed upon the principles here recommended.—But to proceed in giving directions for the conſtruction of theſe Fire-places.

In order that what I have to offer on this ſubject may be the more eaſily underſtood, it will be proper to begin by explaining the preciſe meaning of all thoſe technical words and expreſſions which I may find it neceſſary or convenient to uſe.

By the *throat* of a Chimney, I mean the lower extremity of its canal, where it unites with the upper part of its open Fire-place.—This throat is commonly found about a foot above the level of the lower part of the mantle, and it is ſometimes contracted to a ſmaller ſize than the reſt of the canal of the Chimney, and ſometimes not.

Fig. 5, ſhows the ſection of a Chimney on the common conſtruction, in which *de* is the throat.

Fig. 6, ſhows the ſection of the ſame Chimney altered and improved, in which *di* is the reduced throat.

The *breaſt* of a Chimney is that part of it which is immediately behind the mantle.—It is the wall which forms the entrance from below into the throat of the Chimney in front, or towards the room.—It is oppoſite to the upper extremity of the back of the open Fire-place, and parallel to it;—

it;—in ſhort it may be ſaid to be the back part of the mantle itſelf.—In the figures 5 and 6, it is marked by the letter *d*. The *width* of the throat of the Chimney (*d e* fig. 5, and *d i* fig. 6,) is taken from the breaſt of the Chimney to the back, and its *length* is taken at right angles to its width, or in a line parallel to the mantle (*a* fig. 5 and 6.).

Before I proceed to give particular directions reſpecting the exact forms and dimenſions of the different parts of a Fire-place, it may be uſeful to make ſuch general and practical obſervations upon the ſubject as can be clearly underſtood without the aſſiſtance of drawings; for the more complete the knowledge of any ſubject is which can be acquired without drawings, the more eaſy will it be to underſtand the drawings when it becomes neceſſary to have recourſe to them.

The bringing forward of the fire into the room, or rather bringing it nearer to the front of the opening of the Fire-place;—and the diminiſhing of the throat of the Chimney, being two objects principally had in view in the alterations in Fire-places here recommended, it is evident that both theſe may be attained merely by bringing forward the back of the Chimney.—The only queſtion therefore is, how far it ſhould be brought forward? —The anſwer is ſhort and eaſy to be underſtood; —bring it forward as far as poſſible without diminiſhing too much the paſſage which muſt be left for the ſmoke. Now as this paſſage, which, in its narroweſt part, I have called the *throat of the Chimney*, ought, for reaſons which are fully explained in the foregoing Chapter, to be imme-

diately, or perpendicularly over the Fire, it is evident that the back of the Chimney muſt always be built perfectly upright.—To determine therefore the place for the new back, or how far preciſely it ought to be brought forward, nothing more is neceſſary than to aſcertain how wide the throat of the Chimney ought to be left, or what ſpace muſt be left between the top of the breaſt of the Chimney, where the upright canal of the Chimney begins, and the new back of the Fire-place carried up perpendicularly to that height.

In the courſe of my numerous experiments upon Chimnies, I have taken much pains to determine the width proper to be given to this paſſage, and I have found, that, when the back of the Fire-place is of a proper width, the beſt width for the throat of a Chimney, when the Chimney and the Fire-place are at the uſual form and ſize, is *four inches*.—Three inches might ſometimes anſwer, eſpecially where the Fire-place is very ſmall, and the Chimney good, and well ſituated: but as it is always of much importance to prevent thoſe accidental puffs of ſmoke which are ſometimes thrown into rooms by the careleſneſs of ſervants in putting on ſuddenly too many coals at once, upon the fire, and as I found theſe accidents ſometimes happened when the throats of Chimnies were made very narrow, I found that, upon the whole, all circumſtances being well conſidered, and advantages and diſadvantages compared and balanced, *four inches* is the beſt width that can be given to the throat of a Chimney; and this, whether the Fire-place be deſtined to burn wood, coals, turf,

or any other fuel commonly uſed for heating rooms by an open fire.

In Fire-places deſtined for heating very large halls, and where *very great fires* are kept up, the throat of the Chimney may, if it ſhould be thought neceſſary, be made four inches and an half, or five inches wide;—but I have frequently made Fire-places for halls which have anſwered perfectly well where the throats of the Chimnies have not been wider than four inches.

It may perhaps appear extraordinary, upon the firſt view of the matter, that Fire-places of ſuch different ſizes ſhould all require the throat of the Chimney to be of the ſame width; but when it is conſidered that the *capacity* of the throat of a Chimney does not depend on its width alone, but on its width and *length* taken together; and that in large Fire-places, the width of the back, and conſequently the length of the throat of the Chimney, is greater than in thoſe which are ſmaller, this difficulty vaniſhes.

And this leads us to conſider another important point reſpecting open Fire-places, and that is, the width which it will, in each caſe, be proper to give to the back.—In Fire-places as they are now commonly conſtructed, the back is of equal width with the opening of the Fire-place in front;—but this conſtruction is faulty on two accounts.—Firſt, in a Fire-place ſo conſtructed, the ſides of the Fire-place, or *covings*, as they are called, are parallel to each other, and conſequently ill-contrived to throw out into the room the heat they receive from the fire in the form of rays;—and

ſecondly, the large open corners which are formed by making the back as wide as the opening of the Fire-place in front occaſion eddies of wind, which frequently diſturb the fire, and embarraſs the ſmoke in its aſcent in ſuch a manner as often to bring it into the room.—Both theſe defects may be entirely remedied by diminiſhing the width of the back of the Fire-place.—The width, which in moſt caſes, it will be beſt to give it, is *one third* of the width of the opening of the Fire-place in front.—But it is not abſolutely neceſſary to conform rigorouſly to this deciſion, nor will it always be poſſible.—It will frequently happen that the back of a Chimney muſt be made wider than, according to the rule here given, it ought to be.—This may be, either to accommodate the Fire-place to a ſtove, which being already on hand, muſt, to avoid the expence of purchaſing a new one, be employed; or for other reaſons;—and any ſmall deviation from the general rule will be attended with no conſiderable inconvenience.—It will always be beſt, however, to conform to it as far as circumſtances will allow.

Where a Chimney is deſigned for warming a room of a middling ſize, and where the thickneſs of the wall of the Chimney in front, meaſured from the front of the mantle to the breaſt of the Chimney, is nine inches, I ſhould ſet off four inches more for the width of the throat of the Chimney, which, ſuppoſing the back of the Chimney to be built upright, as it always ought to be, will give thirteen inches for the depth of the Fire-place, meaſured upon the hearth, from the open-

ing

ing of the Fire-place in front to the back.—In this caſe thirteen inches would be a good ſize for the width of the back; and three times thirteen inches, or thirty-nine inches, for the width of the opening of the Fire-place in front; and the angle made by the back of the fire-place and the ſides of it, or covings, would be juſt 135 degrees, which is the beſt poſition they can have for throwing heat into the room.

In determining the width of the opening of this Fire-place in front, I have ſuppoſed the Chimney to be *perfectly good*, and *well ſituated*. If there is the ſmalleſt reaſon to apprehend its ever ſmoking, or of dirt coming into the room when the fire is ſtirred, the opening of the Fire-place in front muſt be made narrower, and the covings placed at an angle leſs than that of 135 degrees, and in this caſe, the height of the opening of the Fire-place in front ſhould be likewiſe diminiſhed.

But I will ſuppoſe that in altering a Chimney it is found neceſſary, in order to accommodate the Fire-place to a grate or ſtove already on hand, to make the Fire-place ſixteen inches wide.—In that caſe, I ſhould merely increaſe the width of the back, to the dimenſions required, without altering the depth of the Chimney or increaſing the width of the opening of the Chimney in front.—The covings, it is true, would be ſomewhat reduced in their width, by this alteration; and their poſition with reſpect to the plane of the back of the Chimney would be a little changed; but theſe alterations would produce no bad effects of any conſiderable

ſiderable conſequence, and would be much leſs likely to injure the Fire-place, than an attempt to bring the proportions of its parts nearer to the ſtandard, by increaſing the depth of the Chimney and the width of its opening in front;—or than an attempt to preſerve that particular obliquity of the covings which is recommended as the beſt, (135 degrees,) by increaſing the width of the opening of the Fire-place, without increaſing its depth.

In order to illuſtrate this ſubject more fully, we will ſuppoſe one caſe more.—We will ſuppoſe that in the Chimney which is to be altered, the width of the Fire-place in front is either wider or narrower than it ought to be, in order that the different parts of the Fire-place after it is altered, may be of the proper dimenſions. In this caſe, I ſhould determine the depth of the Fire-place and the width of the back of it, without any regard to the width of the opening of the Fire-place in front; and when this is done, if the opening of the Fire-place ſhould be only two or three inches too wide, that is to ſay, only two or three inches wider than is neceſſary in order that the covings may be brought into their proper poſition with reſpect to the back, I ſhould not alter the width of this opening, but ſhould accommodate the covings to this width, by increaſing their breadth, and increaſing the angle they make with the back of the Fire-place;—but if the opening of the Fire-place ſhould be more than three inches too wide;—I ſhould reduce it to the proper width by ſlips of ſtone, or by bricks and mortar.

When

When the width of the opening of the Fire-place, in front, is very great, compared with the depth of the Fire-place, and with the width of the back, the covings in that caſe being very wide, and conſequently very oblique, and the Fire-place very ſhallow, any ſudden motion of the air in front of the Fire-place; (that motion, for inſtance, which would be occaſioned by the clothes of a woman paſſing haſtily before the fire, and very near it;) would be apt to cauſe eddies in the air, *within the opening of the Fire-place*, by which puffs of ſmoke might eaſily be brought into the room *.

Should the opening of the Chimney be too narrow, *which however will very ſeldom be found to be the caſe*, (for the openings of Chimney Fire-places in front are in general much too large, or too wide, and too high,) it will, in general, be adviſeable to let it remain as it is, and to accommodate the covings to it, rather than to attempt to increaſe its width, which would be attended with a good deal of trouble, and probably a conſiderable expence.

From all that has been ſaid it is evident, that the points of the greateſt importance, and which ought moſt particularly to be attended to in altering Fire-places upon the principles here recommended, are, the bringing forward the back to its

* I have had occaſion to obſerve that a great many Chimnies in this country that have been altered on what have been called my principles, have this fault. Great care ſhould be taken that the opening of a Chimney Fire-place ſhould neither be too wide nor too high; eſpecially where coal is uſed as fuel.

proper place, and making it of a proper width.—But it is time that I ſhould mention another matter upon which it is probable that my reader is already impatient to receive information.—Proviſion muſt be made for the paſſage of the Chimney-ſweeper up the Chimney.—This may eaſily be done in the following manner:—In building up the new back of the Fire-place; when this wall (which need never be more than the width of a ſingle brick in thickneſs) is brought up ſo high that there remains no more than about ten or eleven inches between what is then the top of it, and the inſide of the mantle, or lower extremity of the breaſt of the Chimney, an opening, or door-way, eleven or twelve inches wide, muſt be begun in the middle of the back, and continued quite to the top of it, which, according to the height to which it will commonly be neceſſary to carry up the back, will make the opening about twelve or fourteen inches high; which will be quite ſufficient to allow the Chimney-ſweeper to paſs. When the Fire-place is finiſhed, this door-way is to be cloſed by a few bricks,—by a tile,—or a fit piece of ſtone, placed in it, dry, or without mortar, and confined in its place by means of a rabbet made for that purpoſe in the brick-work.

As often as the Chimney is ſwept, the Chimney-ſweeper takes down this temporary wall, which is very eaſily done, and when he has finiſhed his work, he puts it again into its place.—The annexed drawing (No. 6.) will give a clear idea of this contrivance; and the experience I have had

of it has proved that it anſwers perfectly well the purpoſe for which it is deſigned.

I obſerved above, that the new back, which it will always be found neceſſary to build in order to bring the fire ſufficiently forward, in altering a Chimney conſtructed on the common principles, need never be thicker than the width of a common brick.—I may ſay the ſame of the thickneſs neceſſary to be given to the new ſides, or covings, of the Chimney; or if the new back and covings are conſtructed of ſtone, one inch and three quarters, or two inches in thickneſs will be ſufficient.—Care ſhould be taken in building up theſe new walls, to unite the back to the covings in a ſolid manner.

Whether the new back and covings are conſtructed of ſtone, or built of bricks, the ſpace between them and the old back and covings of the Chimney ought to be filled up, to give greater ſolidity to the ſtructure.—This may be done with looſe rubbiſh, or pieces of broken bricks, or ſtones, provided the work be ſtrengthened by a few layers or courſes of bricks laid in mortar; but it will be indiſpenſably neceſſary to finiſh the work, where theſe new walls end, that is to ſay, at the top of the throat of the Chimney, where it ends abruptly in the open canal of the Chimney by a horizontal courſe of bricks well ſecured with mortar.—This courſe of bricks will be upon a level with the top of the door-way left for the Chimney-ſweeper.

From theſe deſcriptions it is clear that where the throat of the Chimney has an end, that is to ſay, where it enters into the lower part of the open

open canal of the Chimney, *there* the three walls which form the two covings and the back of the Fire-place all end abruptly.—It is of much importance that they ſhould end in this manner; for were they to be ſloped outward and raiſed in ſuch a manner as to ſwell out the upper extremity of the throat of the Chimney in the form of a trumpet, and increaſe it by degrees to the ſize of the canal of the Chimney, this manner of uniting the lower extremity of the canal of the Chimney with the throat would tend to aſſiſt the winds which may attempt to blow down the Chimney, in forcing their way through the throat, and throwing the ſmoke backward into the room; but when the throat of the Chimney ends abruptly, and the ends of the new walls form a flat horizontal ſurface, it will be much more difficult for any wind from above, to find, and force its way through the narrow paſſage of the throat of the Chimney.

As the two walls which form the new covings of the Chimney are not parallel to each other; but inclined, preſenting an oblique ſurface towards the front of the Chimney, and as they are built perfectly upright and quite flat, from the hearth to the top of the throat, where they end, it is evident that an horizontal ſection of the throat will not be an oblong ſquare; but its deviation from that form is a matter of no conſequence; and no attempts ſhould ever be made, by twiſting the covings above, where they approach the breaſt of the Chimney, to bring it to that form.—All twiſts, bends, prominences, excavations, and other irregularities

larities of form, in the covings of a Chimney, never fail to produce eddies in the current of air which is continually paſſing into, and through an open Fire-place in which a fire is burning;—and all ſuch eddies diſturb, either the fire, or the aſcending current of ſmoke, or both; and not unfrequently cauſe the ſmoke to be thrown back into the room.—And hence it appears, that the covings of Chimnies ſhould never be made circular, or in the form of any other curve; but always quite flat.

For the ſame reaſon, that is to ſay, to prevent eddies, the breaſt of the Chimney, which forms that ſide of the throat that is in front, or neareſt to the room, ſhould be neatly cleaned and rounded off, and its ſurface made quite regular and ſmooth.

This may eaſily be done by covering it with a coat of plaiſter, which may be made thicker or thinner in different parts, as may be neceſſary in order to bring the breaſt of the Chimney to be of the proper form.

With regard to the form of the breaſt of a Chimney, this is a matter of *very great importance*, and which ought always to be particularly attended to.—The worſt form it can have is that of a vertical plane, or upright flat;—and next to this the worſt form is an inclined plane.—Both theſe forms cauſe the current of warm air from the room, which will, in ſpite of every precaution, ſometimes find its way into the Chimney, to croſs upon the current of ſmoke which riſes from the fire, in a manner

manner moſt likely to embarraſs it in its aſcent, and drive it back.—The inclined plane, which is formed by a flat regiſter placed in the throat of a Chimney produces the ſame effects; and this is one reaſon, among many others, which have induced me to diſapprove of regiſter ſtoves.

The current of air, which, paſſing under the mantle, gets into the Chimney, ſhould be made *gradually to bend its courſe upwards*, by which means it will unite *quietly* with the aſcending current of ſmoke, and will be leſs likely to check it, or force it back into the room.—Now this may be effected with the greateſt eaſe and certainty, merely by *rounding off* the breaſt of the Chimney or back part of the mantle, inſtead of leaving it flat, or full of holes and corners; and this of courſe ought always to be done *.

I have hitherto given no preciſe directions in regard to the height to which the new back and covings ought to be carried:—this will depend not only on the height of the mantle, but alſo, and more eſpecially, on the height of the breaſt of the Chimney, or of that part of the Chimney where the breaſt ends and the upright canal begins.—The back and covings muſt riſe a few inches,

* I am ſorry to find that little attention has been paid to this moſt important point by workmen who have undertaken to fit up Chimney Fire-places on the principles recommended in this Eſſay. Few of them have given themſelves the trouble to lower the throats of Chimnies, even where that alteration has been very neceſſary; and many of them have paid no attention whatever to the rounding off and ſmoothing of the breaſt of the Chimney. Both theſe are however matters of the greateſt conſequence, and ſhould never be neglected.

five

five or ſix for inſtance, higher than this part, otherwiſe the throat of the Chimney will not be properly formed; but I know of no advantages that would be gained by carrying them up ſtill higher.

I mentioned above, that the ſpace between the walls which form the new back and covings, and the old back and ſides of the Fire-place, ſhould be filled up;—but this muſt not be underſtood to apply to the ſpace between the wall of dry bricks, or the tile which cloſes the paſſage for the Chimney-ſweeper, and the old back of the Chimney; for that ſpace muſt be left void, otherwiſe, though this tile (which at moſt will not be more than two inches in thickneſs) were taken away, there would not be room ſufficient for him to paſs.

In forming this door-way, the beſt method of proceeding is to place the tile or flat piece of ſtone deſtined for cloſing it, in its proper place; and to build round it, or rather by the ſides of it; taking care not to bring any mortar near it, in order that it may be eaſily removed when the door-way is finiſhed.—With regard to the rabbet which ſhould be made in the door-way to receive it and fix it more firmly in its place, this may either be formed at the ſame time when the door-way is built, or it may be made after it is finiſhed, by attaching to its bottom and ſides, with ſtrong mortar, pieces of thin roof tiles. Such as are about half an inch in thickneſs will be beſt for this uſe; if they are thicker, they will diminiſh too much the opening of the door-way, and will likewiſe be more liable

to

to be torn away by the Chimney-ſweeper in paſſing up and down the Chimney.

It will hardly be neceſſary for me to add, that the tile, or flat ſtone, or wall of dry bricks, which is uſed for cloſing up this door-way, muſt be of ſufficient height to reach quite up to a level with the top of the walls which form the new back and covings of the Chimnies.

I ought, perhaps, to apologiſe for having been ſo very particular in theſe deſcriptions and explanations, but it muſt be remembered that this Chapter is written principally for the information of thoſe who, having had few opportunities of employing their attention in abſtruſe philoſophical reſearches, are not ſufficiently practiſed in theſe intricate inveſtigations, to ſeize, with facility, new ideas;—and conſequently, that I have frequently been obliged *to labour* to make myſelf underſtood.

I have only to expreſs my wiſhes that my reader may not be more *fatigued* with this labour than I have been;—for we ſhall then moſt certainly be ſatisfied with each other.—But to return once more to the charge.

There is one important circumſtance reſpecting Chimney Fire-places deſtined for burning coals, which ſtill remains to be farther examined;—and that is the Grate.

Although there are few grates that may not be uſed in Chimnies conſtructed or altered upon the principles here recommended, yet they are not, by any means, all equally well adapted for that purpoſe.—Thoſe whoſe conſtruction is the moſt ſimple, and

and which of courſe are the cheapeſt, are beyond compariſon the beſt *on all accounts*.—Nothing being wanted in theſe Chimnies but merely a grate for containing the coals, and in which they will burn with a clear fire; and all additional apparatus being not only uſeleſs, but very pernicious, all complicated and expenſive grates ſhould be laid aſide, and ſuch as are more ſimple ſubſtituted in the room of them.—And in the choice of a grate, as in every thing elſe, *beauty* and *elegance* may eaſily be united with the *moſt perfect ſimplicity*.—Indeed they are incompatible with every thing elſe.

In placing the grate, the thing principally to be attended to is, to make the back of it coincide with the back of the Fire-place; but as many of the grates now in common uſe will be found to be too large, when the Fire-places are altered and improved, it will be neceſſary to diminiſh their capacities by filling them up at the back and ſides with pieces of fire-ſtone. When this is done, it is the front of the flat piece of fire-ſtone which is made to form a new back to the grate, which muſt be made to coincide with, and make part of the back of the Fire-place.—But in diminiſhing the capacities of grates with pieces of fire-ſtone, care muſt be taken not to make them *too narrow*.

The proper width for grates deſtined for rooms of a middling ſize will be from ſix to eight inches, and their length may be diminiſhed more or leſs, according as the room is heated with more or leſs difficulty, or as the weather is more or leſs ſevere. —But where the width of a grate is not more than five

five inches, it will be very difficult to prevent the fire from going out, particularly if the back and ſides of the grate be made of iron.

It goes out for the ſame reaſon that a live coal from the grate that falls upon the hearth ſoon ceaſes to be red hot;—it is cooled by the cold body on which it lies, and by the ſurrounding cold air of the atmoſphere.—The knowledge of the cauſe which produces this effect is important, as it indicates the means which may be uſed for preventing it.—But of this ſubject I ſhall treat more fully hereafter.

It frequently happens that the iron backs of grates are not vertical, or upright, but *inclined backwards*.—When theſe grates are ſo much too wide as to render it neceſſary to fill them up behind with fire-ſtone, the inclination of the back will be of little conſequence; for by making the piece of ſtone with which the width of the grate is to be diminiſhed, in the form of a wedge, or thicker above than below, the front of this ſtone, which in effect will become the back of the grate, may be made perfectly vertical; and the iron back of the grate being hid in the ſolid work of the back of the Fire-place, will produce no effect whatever; but if the grate be already ſo narrow as not to admit of any diminution of its width, in that caſe it will be beſt to take away the iron back of the grate entirely, and fixing the grate firmly in the brick-work, cauſe the back of the Fire-place to ſerve as a back to the grate.—This I have very frequently done, and have always found it to anſwer perfectly well. Indeed it will always be beſt to remove entirely the iron backs

backs and ſides of grates, and to ſupply their places by walls conſtructed of good fire-ſtone or of fire-bricks.

Where it is neceſſary that the fire in a grate ſhould be very ſmall, it will be beſt, in reducing the grate with fire-ſtone, to bring its cavity, deſtined for containing the fuel, to the form of one half of a hollow hemiſphere; the two ſemicircular openings being one above, to receive the coals, and the other in front, or towards the bars of the grate; for when the coals are burnt in ſuch a confined ſpace, and ſurrounded on all ſides, except in the front and above, by fire-ſtone, (a ſubſtance peculiarly well adapted for confining heat,) the heat of the fire will be concentrated, and the cold air of the atmoſphere being kept at a diſtance, a much ſmaller quantity of coals will burn, than could poſſibly be made to burn in a grate where they would be more expoſed to be cooled by the ſurrounding air, or to have their heat carried off by being in contact with iron, or with any other ſubſtance through which heat paſſes with greater facility than through fire-ſtone.

Being perſuaded that if the improvements in Chimney Fire-places here recommended ſhould be generally adopted, (which I cannot help flattering myſelf will be the caſe,) that it will become neceſſary to reduce, very conſiderably, the ſizes of grates, I was deſirous of ſhowing how this may, with the greateſt ſafety and facility, be done.

Where grates, which are deſigned for rooms of a middling ſize, are longer than 14 or 15 inches, it

will always be beſt, not merely to diminiſh their lengths, by filling them up at their two ends with fire-ſtone, but, forming the back of the Chimney of a proper width, without paying any regard to the length of the grate, to carry the covings through the two ends of the grate in ſuch a manner as to conceal them, or at leaſt to conceal the back corners of them in the walls of the covings.

I cannot help flattering myſelf that the directions here given in regard to the alterations which it may be neceſſary to make in Fire-places, in order to introduce the improvements propoſed, will be found to be ſo perfectly plain and intelligible that no one who reads them will be at any loſs reſpecting the manner in which the work is to be performed;—but as order and arrangement tend much to facilitate all mechanical operations, I ſhall here give a few ſhort directions reſpecting the manner of *laying out the work*, which may be found uſeful, and particularly to gentlemen who may undertake to be their own architects, in ordering and directing the alterations to be made for the improvement of their Fire-places.

Directions for laying out the Work.

If there be a grate in the Chimney which is to be altered, it will always be beſt to take it away; and when this is done, the rubbiſh muſt be removed, and the hearth ſwept perfectly clean.

Suppoſe

Suppoſe the annexed figure No. 1. to repreſent the ground plan of ſuch a Fire-place; A B being the opening of it in front, A C and B D the two ſides or covings, and C D the back.

Figure 2 ſhows the elevation of this Fire-place.

Firſt draw a ſtraight line with chalk, or with a lead pencil, upon the hearth, from one jamb to the other,—even with the front of the jambs. The dotted line A B, figure 3, may repreſent this line.

From the middle C of this line, (A B) another line *c d*, is to be drawn perpendicular to it, acroſs the hearth, to the middle *d*, of the back of the Chimney.

A perſon muſt now ſtand upright in the Chimney, with his back to the back of the Chimney, and hold a plumb-line to the middle of the upper part of the breaſt of the Chimney (*d*, fig. 5,) or where the canal of the Chimney begins to riſe perpendicularly;—taking care to place the line above in ſuch a manner that the plumb may fall on the line *c d*, draw on the hearth from the middle of the opening of the Chimney in front to the middle of the back, and an aſſiſtant muſt mark the preciſe place *e*, on that line where the plumb falls.

This being done, and the perſon in the Chimney having quitted his ſtation, four inches are to be ſet off on the line *c d*, from *e* towards *d*; and the point *f*, where theſe four inches end, (which muſt be marked with chalk, or with a pencil,) will ſhow how far the new back is to be brought forward.

Through *f*, draw the line *g h*, parallel to the line A B, and this line *g h* will ſhow the direction of the new back, or the ground line upon which it is to be built.

The line *c f* will ſhow the depth of the new Fire-place; and if it ſhould happen that *c f* is equal to about *one-third* of the line A B; and if the grate can be accommodated to the Fire-place inſtead of its being neceſſary to accommodate the Fire-place to the grate, in that caſe, half the length of the line *c f* is to be ſet off from *f* on the line *g f h*, on one ſide to *k*, and on the other to *i*, and the line *i k* will ſhow the ground line of the fore part of the back of the Chimney.

In all caſes where the width of the opening of the Fire-place in front (A B) happens to be not greater, or not more than two or three inches greater than *three times* the width of the new back of the Chimney (*i k*), this opening may be left, and lines drawn from *i* to A, and from *k* to B, will ſhow the width and poſition of the front of the new covings;—but when the opening of the Fire-place in front is ſtill wider, it muſt be reduced; which is to be done in the following manner:

From *c*, the middle of the line A B, *c a*, and *c b*, muſt be ſet off equal to the width of the back (*i k*), added to half its width (*f i*), and lines drawn from *i* to *a*, and from *k* to *b*, will ſhow the ground plan of the fronts of the new covings.

When this is done, nothing more will be neceſſary than to build up the back and covings; and if the Fire-place is deſigned for burning coals,

to

to fix the grate in its proper place, according to the directions already given.—When the width of the Fire-place is reduced, the edges of the covings *a* A and *b* B are to make a finiſh with the front of the jambs.—And in general it will be beſt, not only for the ſake of the appearance of the Chimney, but for other reaſons alſo, to lower the height of the opening of the Fire-place, whenever its width in front is diminiſhed.

There are indeed very few Chimnies to be found in this country which would not be greatly improved by lowering the opening of the Fire-place in front at leaſt ſix, eight, or even ten inches; for much of the warm air of the room is loſt in conſequence of a ſtrong current of air that is continually preſſing into the Fire-place, between the top of the burning fuel and the mantle. And this current not only occaſions a great loſs of heat, but tends to check the aſcent of the ſmoke.

Fig. 4 ſhows a front view of the Chimney after it has been altered according to the directions here given.—By comparing it with fig. 2, (which ſhows a front view of the ſame Chimney before it was altered,) the manner in which the opening of the Fire-place in front is diminiſhed may be ſeen.—In fig. 4 the under part of the door-way by which the chimney-ſweeper gets up the Chimney is repreſented by white dotted lines. The door-way is repreſented cloſed.

I ſhall finiſh this Chapter with ſome general obſervations relative to the ſubject under conſideration; with directions how to proceed where ſuch

local circumſtances exiſt as render modifications of the general plan indiſpenſably neceſſary.

Whether a Chimney be deſigned for burning wood upon the hearth, or wood or coals in a grate, the form of the Fire-place is, in my opinion, moſt perfect when *the width of the back* is equal to the *depth of the Fire-place*, and the opening of the Fire-place in front equal to *three times* the width of the back, or, which is the ſame thing, to *three times the depth of the Fire-place.*

But if the Chimney be deſigned for burning wood upon the hearth, upon hand-irons, or dogs, as they are called, it will ſometimes be neceſſary to accommodate the width of the back to the length of the wood; and when this is the caſe, the covings muſt be accommodated to the width of the back, and the opening of the Chimney in front.

When the wall of the Chimney in front, meaſured from the upper part of the breaſt of the Chimney to the front of the mantle, is very thin, it may happen, and eſpecially in Chimnies deſigned for burning wood upon the hearth, or upon dogs, that the depth of the Chimney, determining according to the directions here given, may be too ſmall.

Thus, for example, ſuppoſing the wall of the Chimney in front, from the upper part of the breaſt of the Chimney to the front of the mantle, to be only four inches, (which is ſometimes the caſe, particularly in rooms ſituated near the top of a houſe,) in this caſe, if we take four inches for the width of the

the throat, this will give eight inches only for the depth of the Fire-place, which would be too little, even were coals to be burnt inſtead of wood.—In this caſe I ſhould increaſe the depth of the Fire-place at the hearth to 12 or 13 inches, and ſhould build the back perpendicular to the height of the top of the burning fuel, (whether it be wood burnt upon the hearth, or coals in a grate,) and then, ſloping the back by a gentle inclination forward, bring it to its proper place, that is to ſay, *perpendicularly under the back part of the throat of the Chimney.* This ſlope, (which will bring the back forward four or five inches, or juſt as much as the depth of the Fire-place is increaſed,) though it ought not to be too abrupt, yet it ought to be quite finiſhed at the height of eight or ten inches above the fire, otherwiſe it may perhaps cauſe the Chimney to ſmoke; but when it is very near the fire, the heat of the fire will enable the current of riſing ſmoke to overcome the obſtacle which this ſlope will oppoſe to its aſcent, which it could not do ſo eaſily were the ſlope ſituated at a greater diſtance from the burning fuel *.

Fig.

* Having been obliged to carry backward the Fire-place in the manner here deſcribed, in order to accommodate it to a Chimney whoſe walls in front were remarkably thin,—I was ſurpriſed to find upon lighting the fire that it appeared to give out more heat into the room than any Fire-place I had ever conſtructed.—This effect was quite unexpected; but the cauſe of it was too obvious not to be immediately diſcovered.—The flame riſing from the fire broke againſt the part of the back which ſloped forward over the fire, and this part of the back being ſoon very much heated, and in conſequence of its being very hot, (and when the fire burnt bright it was frequently quite red hot,) it

Fig. 7, 8, and 9, ſhew a plan, elevation, and ſection of a Fire-place conſtructed or altered upon

threw off into the room a great deal of radiant heat.—It is not poſſible that this oblique ſurface (the ſlope of the back of the fire-place) could have been heated red-hot *merely* by the radiant heat projected by the burning fuel, for other parts of the Fire-place nearer the fire and better ſituated for receiving radiant heat, were never found to be ſo much heated;—and hence it appears that the combined heat in the current of ſmoke and hot vapour which riſes from an open fire *may be*, at leaſt *in part*, ſtopped in its paſſage up the Chimney, changed into radiant heat, and afterwards thrown into the room.—This opens a new and very intereſting field for experiment, and bids fair to lead to important improvements in the conſtruction of Fire-places.—I have of late been much engaged in theſe inveſtigations, and am now actually employed daily in making a variety of experiments with grates and Fire-places upon different conſtructions, in the room I inhabit in the Royal Hotel in Pall Mall;—and Mr. Hopkins of Greek-ſtreet, Soho, Ironmonger to his Majeſty, and Mrs. Hempel, at her pottery at Chelſea, are both at work in their different lines of buſineſs, under my direction, in the conſtruction of Fire-places upon a principle entirely new, and which, I flatter myſelf, will be found to be not only elegant and convenient, but very economical—But as I mean ſoon to publiſh a particular account of theſe Fire-places,—with drawings and ample directions for conſtructing them, I ſhall not enlarge farther on the ſubject in this place.—It may however not be amiſs juſt to mention here, that theſe new invented Fire-places not being fixed to the walls of the Chimney, but merely ſet down upon the hearth, may be uſed in any open Chimney; and that Chimnies altered or conſtructed on the principles here recommended are particularly well adapted for receiving them.

The Public in general, and more particularly thoſe tradeſmen and Manufacturers whom it may concern, are requeſted to obſerve, that as the Author does not intend to take out himſelf, or to ſuffer others to take out, any patent for any invention of his which may be of public utility, all perſons are at full liberty to imitate them, and vend them for their own emolument, when and where, and in any way they may think proper; and thoſe who may wiſh for any further information reſpecting any of thoſe inventions or improvements will receive (*gratis*) all the information they can require by applying to the Author, who will take pleaſure in giving them every aſſiſtance in his power.

this

this principle.—The wall of the Chimney in front at *a*, fig. 9, being only four inches thick, four inches more added to it for the width of the throat would have left the depth of the Fire-place meaſured upon the hearth *b c* only eight inches, which would have been too little;—a niche *c* and *e*, was therefore made in the new back of the Fire-place for receiving the grate, which niche was ſix inches deep in the centre of it, below 13 inches wide, (or equal in width to the grate,) and 23 inches high; finiſhing above with a ſemicircular arch, which, in its higheſt part, roſe ſeven inches above the upper part of the grate.—The door-way for the Chimney-ſweeper, which begins juſt above the top of the niche, may be ſeen diſtinctly in both the figures 8 and 9.—The ſpace marked *g*, fig. 9, behind this door-way, may either be filled with looſe bricks, or may be left void.—The manner in which the piece of ſtone *f*, fig. 9, which is put under the mantle of the Chimney to reduce the height of the opening of the Fire-place, is rounded off on the inſide in order to give a fair run to the column of ſmoke in its aſcent through the throat of the Chimney, is clearly expreſſed in this figure.

The plan fig. 7, and elevation fig. 8, ſhow how much the width of the opening of the Fire-place in front is diminiſhed, and how the covings in the new Fire-place are formed.

A perfect idea of the form and dimenſion of the Fire-place in its original ſtate, as alſo after its alteration,

alteration, may be had by a careful inſpection of theſe figures.

I have added the drawing, fig. 10, merely to ſhow how a fault, which I have found workmen in general whom I have employed in altering Fire-places are very apt to commit, is to be avoided.—In Chimnies, like that repreſented in this figure, where the jambs A and B project far into the room, and where the front edge of the marble ſlab *o*, which forms the coving, does not come ſo far forward as the front of the jambs, the workmen, in conſtructing the new covings, are very apt to place them,—not in the line *c A*, which they ought to do,—but in the line *c o*, which is a great fault.—The covings of a chimney ſhould never range *behind* the front of the jambs, however thoſe jambs may project into the room;—but it is not abſolutely neceſſary that the covings ſhould *make a finiſh* with the internal front corners of the jambs, or that they ſhould be continued from the back *c*, quite to the front of the jambs at *A*.—They may finiſh in front at *a* and *b*, and ſmall corners *A o a*, may be left for placing the ſhovels, tongs, &c.

Were the new coving to range with the front edge of the old coving *o*, the obliquity of the new coving would commonly be too great;—or the angle *d c o* would exceed 135 degrees, *which it never ſhould do*,—or at leaſt never by more than a very few degrees.

No inconvenience of any importance will ariſe from making the obliquity of the covings *leſs* than what

what is here recommended; but many cannot fail to be produced by making it much greater;—and as I know from experience that workmen are very apt to do this, I have thought it neceſſary to warn them particularly againſt it.

Fig. 11 ſhews how the width and obliquity of the covings of a Chimney are to be accommodated to the width of the back, and to the opening in front and depth of the Fire-place, where the width of the opening of the Fire-place is leſs than three times the width of the new back.

As all thoſe who may be employed in altering Chimnies may not, perhaps, know how to ſet off an angle of any certain number of degrees,—or may not have at hand the inſtruments neceſſary for doing it,—I ſhall here ſhow how an inſtrument may be made which will be found to be very uſeful in laying out the work for the bricklayers.

Upon a board about 18 inches wide and four feet long, or upon the floor or a table, draw three equal ſquares A, B, C, fig. 12, of about 12 or 14 inches each ſide, placed in a ſtraight line, and touching each other.—From the back corner *c* of the centre ſquare B, draw a diagonal line acroſs the ſquare A, to its outward front corner *f*, and the adjoining angle formed by the lines *d c* and *c f* will be equal to 135 degrees,—the angle which the plane of the back of a Chimney Fire-place ought to make with the plane of its covings.—And a bevel *m n*, being made to this angle with thin ſlips of hard wood, this little inſtrument will be found to be very uſeful in marking out on the hearth, with chalk,

chalk, the plans of the walls which are to form the covings of Fire-places.

As Chimnies which are apt to ſmoke will require the covings to be placed *leſs obliquely* in reſpect to the back than others which have not that defect, it would be convenient to be provided with ſeveral bevels;—three or four, for inſtance, forming different angles.—That already deſcribed, which may be called No. 1. will meaſure the obliquity of the covings when the Fire-place can be made of the moſt perfect form:—another, No. 2. may be made to a ſmaller angle, *d c e*;—and another, No. 3, for Chimnies which are very apt to ſmoke, at the ſtill ſmaller angle *d c i*.—Or a bevel may be ſo contrived, by means of a joint, and an arch, properly graduated, as to ſerve for all the different degrees of obliquity which it may ever be neceſſary to give to the covings of Fire-places.

Another point of much importance, and particularly in Chimnies which are apt to ſmoke, is to form the throat of the Chimney properly, by carrying up the back and covings to a proper height.

This workmen are apt to neglect to do, probably on account of the difficulty they find in working where the opening of the canal of the Chimney is ſo much reduced.—But it is abſolutely neceſſary that theſe walls ſhould be carried up five or ſix inches at leaſt above the upper part of the breaſt of the Chimney, or to that point where the wall which forms the front of the throat begins to riſe perpendicularly.—If the workman has intelligence enough

to

to avail himſelf of the opening which is formed in the back of the Fire-place to give a paſſage to the Chimney-ſweeper, he will find little difficulty in finiſhing his work in a proper manner.

In placing the plumb-line againſt the breaſt of the Chimney, in order to aſcertain how far the new back is to be brought forward, great care muſt be taken to place it at the very top of the breaſt, where the canal of the Chimney *begins to riſe perpendicularly;* otherwiſe, when the plumb-line is placed too low, or againſt the ſlope of the breaſt, when the new back comes to be raiſed to its proper height, the throat of the Chimney will be found to be too narrow.

Sometimes, and indeed very often, the top of the breaſt of a Chimney lies very high, or far above the fire (ſee the figures 13 and 14, where *d* ſhows the top of the breaſt of the Chimney); when this is the caſe *it muſt be brought lower*, otherwiſe the Chimney will be very apt to ſmoke.—So much has been ſaid in the Firſt Chapter of this Eſſay of the advantages to be derived from *bringing the throat of a Chimney near to the burning fuel*, that I do not think it neceſſary to enlarge on them in this place,—taking it for granted that the utility and neceſſity of that arrangement have already been made ſufficiently evident;—but a few directions for workmen, to ſhow them how the breaſt (and conſequently the throat) of a Chimney can moſt readily be lowered, may not be ſuperfluous.

Where the too great height of the breaſt of a Chimney is owing to the great height of the

mantle, (ſee fig. 13,) or, which is the ſame thing, of the opening of the Fire-place in front, which will commonly be found to be the caſe; the only remedy for the evil will be to bring down the mantle lower;—or rather, to make the opening of the Fire-place in front lower, by a wall of bricks and mortar under the mantle, ſupported on ſtraight bars of iron;—or by a piece of ſtone (*b*, fig. 13) placed immediately under the mantle.—When this is done, the ſlope of the old throat of the Chimney, or of the back ſide of the mantle, is to be filled up with plaſter, ſo as to form one continued flat, vertical, or upright plane ſurface with the lower part of the wall of the canal of the Chimney, and a new breaſt is to be formed lower down, care being taken to round it off properly, and make it finiſh at the lower ſurface of the new wall built under the mantle;—which wall forms in fact a new mantle.

The annexed drawing, fig. 13, which repreſents the ſection of a Chimney in which the breaſt has been lowered according to the method here deſcribed, will ſhow theſe various alterations in a clear and ſatisfactory manner. In this figure, as well as in moſt of the others in this Eſſay, the old walls are diſtinguiſhed from the new ones by the manner in which they are ſhaded;—the old walls being ſhaded by diagonal lines, and the new ones by vertical lines. The additions, which are formed of plaſter, are ſhaded by dots inſtead of lines.

Where

Where the too great height of the breaſt of a Chimney is occaſioned, not by the height of the mantle, but by the too great width of the breaſt, in that caſe, (which however will ſeldom be found to occur,) this defect may be remedied by covering the lower part of the breaſt with a thick coating of plaſter, ſupported, if neceſſary, by nails or ſtuds, driven into the wall which forms the breaſt, and properly rounded off at the lower part of the mantle.—See fig. 14.

CHAP. III.

Of the Cauſe of the Aſcent of Smoke.—Illuſtration of the Subject by familiar Compariſons and Experiments.—Of Chimnies which affect and cauſe each other to ſmoke.—Of Chimnies which ſmoke from Want of Air.—Of the Eddies of Wind which ſometimes blow down Chimnies, and cauſe them to ſmoke.

THOUGH it was my wiſh to avoid all abſtruſe philoſophical inveſtigations in this Eſſay, yet I feel that it is neceſſary to ſay a few words upon a ſubject generally conſidered as difficult to be explained, which is too intimately connected with the matter under conſideration to be paſſed over in ſilence.—A knowledge of the cauſe of the aſcent of Smoke being indiſpenſably neceſſary to thoſe who engage in the improvement of Fire-places, or who are deſirous of forming juſt ideas relative to the operations of fire, and the management of heat, I ſhall devote a few pages to the inveſtigation of that curious and intereſting ſubject.—And as many of thoſe who may derive advantage from theſe inquiries are not much accuſtomed to philoſophical diſquiſitions, and would not readily comprehend either the language or the diagrams commonly uſed by ſcientific writers to explain the phænomena in queſtion,

tion, I ſhall take pains to expreſs myſelf in the moſt familiar manner, and to uſe ſuch compariſons for illuſtration as may eaſily be underſtood.

If ſmall leaden bullets, or large gooſe ſhot, be mixed with peas, and the whole well ſhaken in a buſhel, the ſhot will ſeparate from the peas, and will take their places at the bottom of the buſhel; forcing by their greater weight the peas, which are lighter, to move upwards, contrary to their natural tendency, and take their places above.

If water, and linſeed oil, which is lighter than water, be mixed in a veſſel, by ſhaking them together, upon ſuffering this mixture to remain quiet, the water will deſcend and occupy the bottom of the veſſel, and the oil, being forced out of its place by the greater preſſure downwards of the heavier liquid, will be obliged to riſe and ſwim on the ſurface of the water.

If a bottle, containing linſeed oil, be plunged in water with its mouth upwards, and open, the oil will aſcend out of the bottle, and paſſing upwards through the maſs of water, in a continued ſtream, will ſpread itſelf over its ſurface.

In like manner, when two fluids of any kind, of different denſities, come into contact, or are mixed with each other, that which is the lighteſt will be *forced upwards* by that which is the heavieſt.

And as heat rarefies all bodies, fluids, as well as ſolids, air, as well as water, or mercury,—it follows that two portions of the ſame fluid, at *different temperatures*, being brought into contact with each

other, that portion which is the hotteſt, being more rarefied, or ſpecifically *lighter* than that which is colder, muſt be *forced upwards* by this laſt.—And this is what always happens in fact.

When hot water and cold water are mixed, the hotteſt part of the mixture will be found to be at the ſurface above;—and when *cold air* is admitted into a *warmed room*, it will always be found to take its place at the bottom of the room, the *warmer air* being in part *expelled*, and in part *forced upwards* to the top of the room.

Both air and water being tranſparent and colourleſs fluids, their internal motions are not eaſily diſcovered by the ſight; and when theſe motions are very ſlow, they make no impreſſion whatever on any of our ſenſes, conſequently they cannot be detected by us without the aid of ſome mechanical contrivance:—but where we have reaſon to think that thoſe motions exiſt, means ſhould be ſought, and may often be found, for rendering them perceptible.

If a bottle containing hot water tinged with logwood, or any other colouring drug, be immerſed, with its mouth open, and upwards, into a deep glaſs jar filled with cold water, the aſcent of the hot water from the bottle through the maſs of cold water will be perfectly viſible through the glaſs.—Now nothing can be more evident than that both of theſe fluids are forced, or *puſhed*, and not *drawn* upwards.—Smoke is frequently ſaid to be *drawn up* the Chimney;—and that a Chimney *draws well* or ill;—but theſe are careleſs expreſſions, and lead to very

very erroneous ideas reſpecting the cauſe of the aſcent of Smoke, and conſequently tend to prevent the progreſs of improvements in the management of fires.—The experiment juſt mentioned with the coloured water is very ſtriking and beautiful, and it is well calculated to give a juſt idea of the cauſe of the aſcent of Smoke. The cold water in the jar, which, in conſequence of its ſuperior weight or denſity, forces the heated and rarefied water in the bottle to give place to it, and to move upwards out of its way, may repreſent the cold air of the atmoſphere, while the riſing column of coloured water will repreſent the column of Smoke which aſcends from a fire.

If Smoke required a Chimney to *draw* it upwards, how happens it that Smoke riſes from a fire which is made in the open air, where there is no Chimney?

If a tube, open at both ends, and of ſuch a length that its upper end be below the ſurface of the cold water in the jar, be held vertically over the mouth of the bottle which contains the hot coloured water, the hot water will riſe up through it, juſt as Smoke riſes in a Chimney.

If the tube be previouſly heated before it is plunged into the cold water, the aſcent of the hot coloured water will be facilitated and accelerated, in like manner as Smoke is known to riſe with greater facility in a Chimney which is hot, than in one in which no fire has been made for a long time.—But in neither of theſe caſes can it, with any propriety, be ſaid, that the hot water is *drawn* up

the tube.—The hotter the water in the bottle is, and the colder that in the jar, the greater will be the velocity with which the hot water will be forced up through the tube; and the ſame holds of the aſcent of hot Smoke in a Chimney. When the fire is intenſe, and the weather very cold, the aſcent of the Smoke is very rapid; and under ſuch circumſtances Chimnies ſeldom ſmoke.

As the cold water of the jar immediately ſurrounding the bottle which contains the hot water, will be heated by the bottle, while the other parts of the water in the jar will remain cold, this water ſo heated, becoming ſpecifically lighter than that which ſurrounds it, will be forced upwards; and if it finds its way into the tube, will riſe up through it with the coloured hot water.—The warmed air of a room heated by an open Chimney Fire-place has always a tendency to riſe, (if I may uſe that inaccurate expreſſion,) and finding its way into the Chimney, frequently goes off with the Smoke.

What has been ſaid will, I flatter myſelf, be ſufficient to explain and illuſtrate, in a clear and ſatisfactory manner, *the cauſe of the aſcent of Smoke;* and juſt ideas upon that ſubject are abſolutely neceſſary in order to judge, with certainty, of the merit of any ſcheme propoſed for the improvement of Fire-places; or to take effectual meaſures, in all caſes, for curing ſmoking Chimnies.—For though the perpetual changes and alterations which are produced by accident, whim, and caprice, do ſometimes lead to uſeful diſcoveries, yet the progreſs

of

of improvement under ſuch guidance muſt be exceedingly ſlow, fluctuating, and uncertain.

As to the cauſes of the ſmoking of Chimnies, they are very numerous, and various; but as a general idea of them may be acquired from what has already been ſaid upon that ſubject in various parts of this Eſſay, and as they may, in all caſes, (a very few only excepted,) be completely remedied by making the alterations in Fire-places here pointed out; I do not think it neceſſary to enumerate them all in this place, or to enter into thoſe long details and inveſtigations which would be required to ſhow the preciſe manner in which each of them operates, either alone, or in conjunction with others.

There is however one cauſe of ſmoking Chimnies which I think it is neceſſary to mention more particularly.—In modern-built houſes, where the doors and windows are generally made to cloſe with ſuch accuracy that no crevice is left for the paſſage of the air from without, the Chimnies in rooms adjoining to each other, or connected by cloſe paſſages, are frequently found to affect each other, and this is eaſy to be accounted for.—When there is a fire burning in one of the Chimnies, as the air neceſſary to ſupply the current up the Chimney where the fire burns cannot be had in ſufficient qauntities from without, through the very ſmall crevices of the doors and windows, the air in the room becomes rarefied, not by heat, but by ſubtraction of that portion of air which is employed in keeping up the fire, or ſupporting the com-

buſtion of the fuel, and in conſequence of this rarefaction, its elaſticity is diminiſhed, and being at laſt overcome by the preſſure of the external air of the atmoſphere, this external air ruſhes into the room by the only paſſage left for it, namely, down by *the open Chimney of the neighbouring room:* —And the flow of air into the Fire-place, and up the Chimney where the fire is burning being conſtant, this expence of air is ſupplied by a continued current down the other Chimney,

If an attempt be made to light fires in both theſe Chimnies at the ſame time, it will be found to be very difficult to get the fires to burn, and the rooms will both be filled with Smoke.

One of the fires,—that which is made in the Chimney where the conſtruction of the Fire-place is beſt adapted to facilitate the aſcent of the Smoke,—or if both Fire-places are on the ſame conſtruction,—that which has the wind moſt favourable, or in which the fire happens to be ſooneſt kindled,—will overcome the other, and cauſe its Smoke to be beat back into the room by the cold air which deſcends through the Chimney. —The moſt obvious remedy in this caſe is to provide for the ſupply of freſh air neceſſary for keeping up the fires by opening a paſſage for the external air into theſe rooms by a ſhorter road than down one of the Chimnies; and when this is done, both Chimnies will be found to be effectually cured.

But Chimnies ſo circumſtanced may very frequently be prevented from ſmoking even without opening any new paſſage for the external air, merely

merely by diminiſhing the draught, (as it is called,) up the Chimnies; which can beſt be done by altering *both Fire-places* upon the principles recommended and fully explained in the foregoing Chapters of this Eſſay.

Should the doors and windows of a room be cloſed with ſo much nicety as to leave no crevices by which a ſupply of air can enter ſufficient for maintaining the fire, *after the current of air up the Chimney has been diminiſhed as much as poſſible by diminiſhing the throat of the Fire-place;* in that caſe there would be no other way of preventing the Chimney from ſmoking but by opening a paſſage for the admiſſion of freſh air from without;—but this, I believe, will very ſeldom be found to be the caſe.

A caſe more frequently to be met with is, where currents of air ſet down Chimnies in conſequence of a diminution and rarefaction of the air in a room, occaſioned by the doors of the room opening into paſſages or courts where the air is rarefied by the action of ſome particular winds. In ſuch caſes the evil may be remedied, either by cauſing the doors in queſtion to cloſe more accurately,—or, (which will be ſtill more effectual,) by giving a ſupply of air to the paſſage or court which wants it, by ſome other way.

Where the top of a Chimney is commanded by high buildings, by clifts, or by high grounds, it will frequently happen, in windy weather, that the eddies formed in the atmoſphere by theſe obſtacles will blow down the Chimney, and beat

down the Smoke into the room.—This, it is true, will be much leſs likely to happen when the throat of the Chimney is contracted and properly formed, than when it is left quite open, and the Fire-place badly conſtructed; but as it is *poſſible* that a Chimney may be ſo much expoſed to theſe eddies in very high winds as to be made to ſmoke ſometimes when the wind blows with violence from a certain quarter, it is neceſſary to ſhow how the effects of thoſe eddies may be prevented.

Various mechanical contrivances have been imagined for preventing the wind from blowing down Chimnies, and many of them have been found to be uſeful; there are, however, many of theſe inventions, which, though they prevent the wind from blowing down the Chimney, are ſo ill contrived on other accounts, as to obſtruct the aſcent of the Smoke, and do more harm than good.

Of this deſcription are all thoſe Chimney-pots with flat horizontal plates or roofs placed upon ſupporters juſt above the opening of the pot;—and moſt of the caps which turn with the wind are not much better.—One of the moſt ſimple contrivances that can be made uſe of, and which in moſt caſes will be found to anſwer the purpoſe intended as well or better than more complicated machinery, is to cover the top of the Chimney with a hollow truncated pyramid or cone, the diameter of which above, or opening for the paſſage of the Smoke, is about 10 or 11 inches.—This pyramid, or cone, (for either will anſwer,)—ſhould be of earthen ware, or of caſt iron;—its perpendicular height may

may be equal to the diameter of its opening above, and the diameter of its opening below equal to three times its height.—It ſhould be placed upon the top of the Chimney, and it may be contrived ſo as to make a handſome finiſh to the brick-work. —Where ſeveral flews come out near each other, or in the ſame ſtack of Chimnies, the form of a pyramid will be better than that of a cone for theſe covers.

The intention of this contrivance is, that the winds and eddies which ſtrike againſt the oblique ſurface of theſe covers may be *reflected upwards*, inſtead of blowing down the Chimney.—The invention is by no means new, but it has not hitherto been often put in practice.—As often as I have ſeen it tried it has been found to be of uſe; I cannot ſay, however, that I was ever obliged to have recourſe to it, or to any ſimilar contrivance; and if I forbear to enlarge upon the ſubject of theſe inventions, it is becauſe I am perſuaded that when Chimnies are properly conſtructed *in the neighbourhood of the Fire-place* little more will be neceſſary to be done at the top of the Chimney than to leave it open.

I cannot conclude this Eſſay without again recommending, in the ſtrongeſt manner, a careful attention to the management of fires in open Chimnies; for not only the quantity of heat produced in the combuſtion of fuel depends much on the manner in which the fire is managed, but even of the heat actually generated a very ſmall part only

only will be ſaved or uſefully employed, when the fire is made in a careleſs and ſlovenly manner.

In lighting a coal fire more wood ſhould be employed than is commonly uſed, and fewer coals; and as ſoon as the fire burns bright, and the coals are well lighted, and *not before*, more coals ſhould be added to increaſe the fire to its proper ſize *.

The

* *Kindling balls* compoſed of equal parts of coal,—charcoal,—and clay, the two former reduced to a fine powder, well mixed and kneaded together with the clay moiſtened with water, and then formed into balls of the ſize of hens' eggs, and thoroughly dried, might be uſed with great advantage inſtead of wood for kindling fires. Theſe *kindling balls* may be made ſo inflammable as to take fire in an inſtant and with the ſmalleſt ſpark, by dipping them in a ſtrong ſolution of nitre and then drying them again, and they would neither be expenſive nor liable to be ſpoiled by long keeping. Perhaps a quantity of pure charcoal reduced to a very fine powder and mixed with the ſolution of nitre in which they are dipped would render them ſtill more inflammable.

I have often wondered that no attempts ſhould have been made to improve the fires which are made in the open Chimnies of elegant apartments, by preparing the fuel; for nothing ſurely was ever more dirty, inelegant, and diſguſting than a common coal fire.

Fire balls of the ſize of gooſe eggs, compoſed of coal and charcoal in powder, mixed up with a due proportion of wet clay, and well dried, would make a much more cleanly, and in all reſpects a pleaſanter fire than can be made with crude coals; and I believe would not be more expenſive fuel. In Flanders and in ſeveral parts of Germany, and particularly in the Duchies of Juliers and Bergen, where coals are uſed as fuel, the coals are always prepared before they are uſed, by pounding them to a powder, and mixing them up with an equal weight of clay, and a ſufficient quantity of water to form the whole into a maſs, which is kneaded together and formed into cakes; which cakes are afterwards well dried and kept in a dry place for uſe. And it has been found by long experience that the expence attending this preparation is amply repaid by the improvement of the fuel. The coals, thus mixed with clay, not only burn longer, but give much more heat than when they are burnt in their crude ſtate.

It

The enormous waſte of fuel in London may be eſtimated by the vaſt dark cloud which continually hangs over this great metropolis, and frequently overſhadows the whole country far and wide; for this denſe cloud is certainly compoſed almoſt entirely of *unconſumed coal*, which, having ſtolen wings from the innumerable fires of this great city, has eſcaped by the Chimnies, and continues to ſail about in the air, till, having loſt the heat which gave it volatility, it falls in a dry ſhower of extremely fine black duſt, to the ground, obſcuring the atmoſphere in its deſcent, and frequently changing the brighteſt day into more than Egyptian darkneſs.

I never view from a diſtance, as I come into town, this black cloud which hangs over London,

It will doubtleſs appear extraordinary to thoſe who have not conſidered the ſubject with ſome attention, that the quantity of heat produced in the combuſtion of any given quantity of coals ſhould be increaſed by mixing the coals with clay, which is certainly an incombuſtible body; but the phenomenon may, I think, be explained in a ſatisfactory manner.

The heat generated in the combuſtion of any ſmall particle of coal exiſting under two diſtinct forms, namely, in that which is *combined* with the flame and ſmoke that riſe from the fire, and which, if means are not found to ſtop it, goes off immediately by the Chimney and is loſt,—and the *radiant heat* which is ſent off from the fire in all directions in right lines:—I think it reaſonable to conclude, that the particles of clay which are ſurrounded on all ſides by the flame arreſt a part at leaſt of the combined heat, and prevent its eſcape; and this combined heat, ſo arreſted, heating the clay red hot, is retained in it, and being changed by this operation to radiant heat, is afterwards emitted, and may be directed and employed to uſeful purpoſes.

In compoſing *fire balls*, I think it probable that a certain proportion of chaff—of ſtraw cut very fine, or even of ſaw-duſt, might be employed with great advantage. I wiſh thoſe who have leiſure would turn their thoughts to this ſubject, for I am perſuaded that very important improvements would reſult from a thorough inveſtigation of it.

without

without wiſhing to be able to compute the immenſe number of chaldrons of coals of which it is compoſed; for could this be aſcertained, I am perſuaded ſo ſtriking a fact would awaken the curioſity, and excite the aſtoniſhment of all ranks of the inhabitants; and *perhaps* turn their minds to an object of economy to which they have hitherto paid little attention.

Concluſion.

Though the ſaving of fuel which will reſult from the improvements in the forms of *Chimney Fire-places* here recommended will be very conſiderable, yet I hope to be able to ſhow, in a future Eſſay, that ſtill greater ſavings may be made, and more important advantages derived from the introduction of improvements I ſhall propoſe in *Kitchen Fire-places.*

I hope likewiſe to be able to ſhow in an Eſſay on *Cottage Fire-places*, which I am now preparing for publication, that *three quarters*, at leaſt, of the fuel which cottagers now conſume in cooking their victuals, and in warming their dwellings, may, with great eaſe, and without any expenſive apparatus, be ſaved.

END OF THE FOURTH ESSAY.

Explanation of the Figures.

Fig. 1.

The plan of a Fire-place on the common conſtruction.

A B, the opening of the Fire-place in front.

C D, the back of the Fire-place.

A C, and B D, the covings.

See page 341.

Fig. 2.

This figure ſhows the elevation or front view of a Fire-place on the common conſtruction.

See page 341.

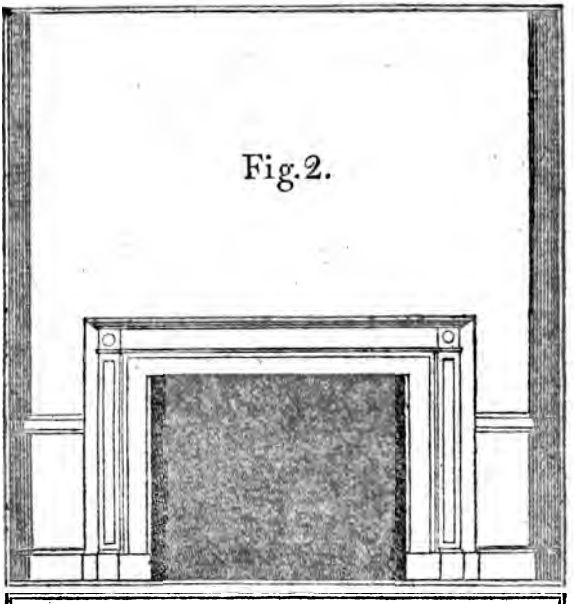


Fig.2.

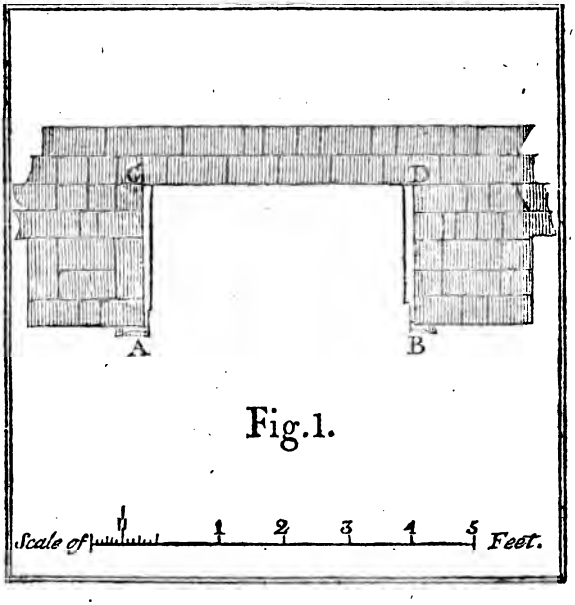


Fig.1.

Fig. 3.

This Figure ſhows how the Fire-place repreſented by the Fig. 1. is to be altered in order to its being improved.

A B is the opening in front,—C D, the back, and A C and B D, the covings of the Fire-place in its original ſtate.

a b, its opening in front,—*i k*, its back,—and *a i* and *b k*, its covings after it has been altered, *e* is a point upon the hearth upon which a plum ſuſpended from the middle of the upper part of the breaſt of the Chimney falls. The ſituation for the new back is aſcertained by taking the line *e f* equal to four inches. The new back and covings are repreſented as being built of bricks;—and the ſpace between theſe and the old back and covings as being filled up with rubbiſh. See page 342.

Fig. 4.

This Figure repreſents the elevation or front view of the Fire-place Fig. 3. after it has been altered. The lower part of the door-way left for the Chimney-ſweeper is ſhown in this Figure by white dotted lines. See page 345.

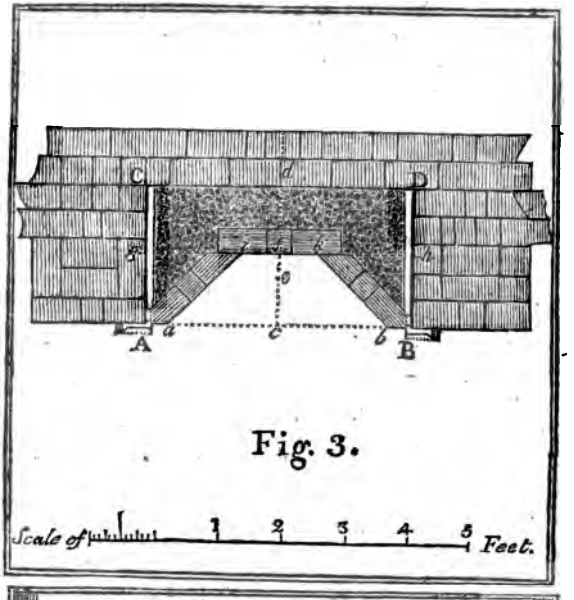


Fig. 3.

Fig. 4.

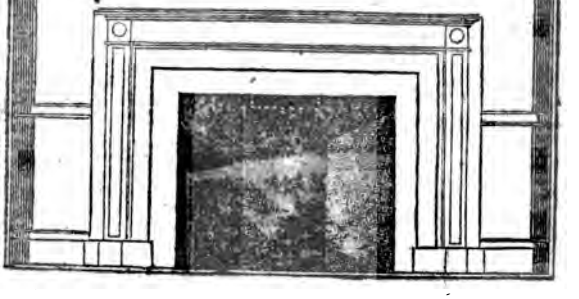


Fig. 5.

This Figure ſhows the ſection of a Chimney Fire-place and of a part of the canal of the Chimney, on the common conſtruction.

a b is the opening in front; *b c*, the depth of the Fire-place at the hearth; *d*, the breaſt of the Chimney.

d e, the throat of the Chimney; and *d f*, *g e*, a part of the open canal of the Chimney.

Fig. 6.

Shows a ſection of the ſame Chimney, after it has been altered.

k l is the new back of the Fire-place; *l i*, the tile or ſtone which cloſes the door-way for the Chimney-ſweeper; *d i*, the throat of the Chimney, narrow to four inches; *a*, the mantle, and *b*, the new wall made under the mantle to diminiſh the height of the opening of the Fire-place in front.

N. B. Theſe two Figures are ſections of the ſame Chimney which is repreſented in each of the four preceding Figures.

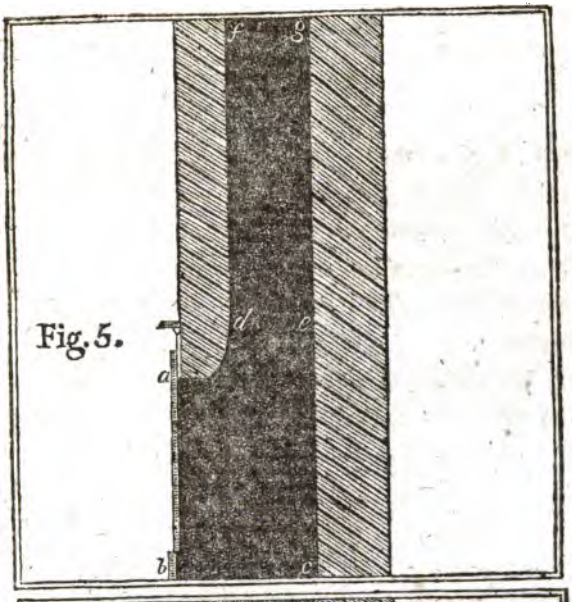


Fig. 5.

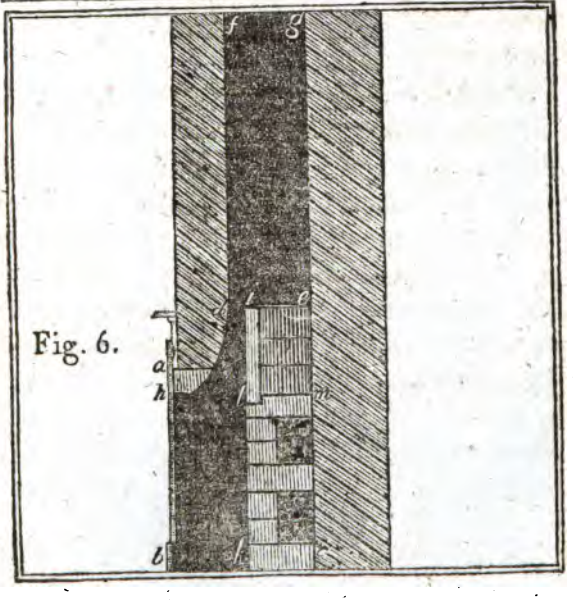


Fig. 6.

Fig. 7.

This Figure repreſents the ground plan of a Chimney Fire-place in which the grate is placed in a niche, and in which the original width A B of the Fire-place is conſiderably diminiſhed.

a b is the opening of the Fire-place in front after it has been altered, and *d* is the back of the niche in which the grate is placed.

See page 348.

Fig. 8.

Shows a front view of the ſame Fire-place after it has been altered; where may be ſeen the grate, and the door-way for the Chimney-ſweeper.

See page 348.

Fig. 9.

Shows a ſection of the ſame Fire-place, *c d e* being a ſection of the niche, *g* the door-way for the Chimney-ſweeper, cloſed by a piece of fire-ſtone, and *f* the new wall under the mantle by which the height of the opening of the Fire-place in front is diminiſhed. See page 348.

Fig. 7.

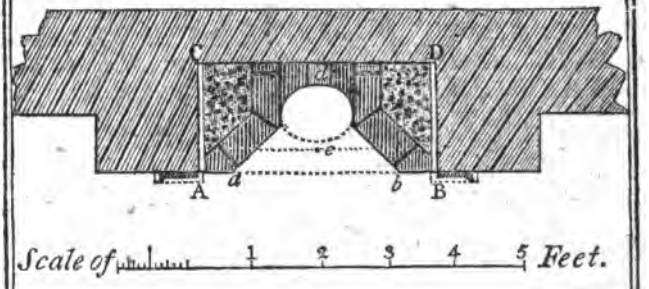
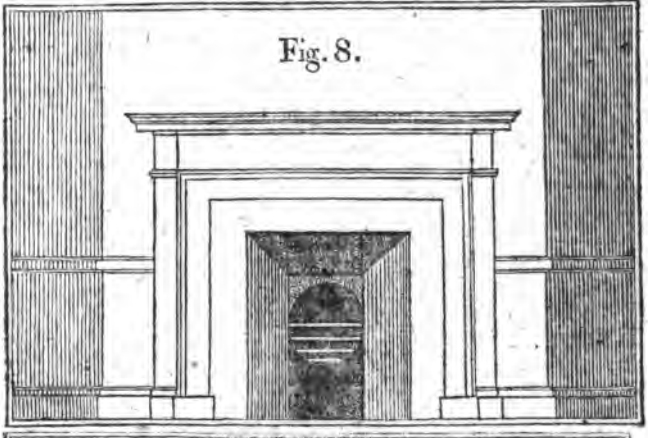


Fig. 8.



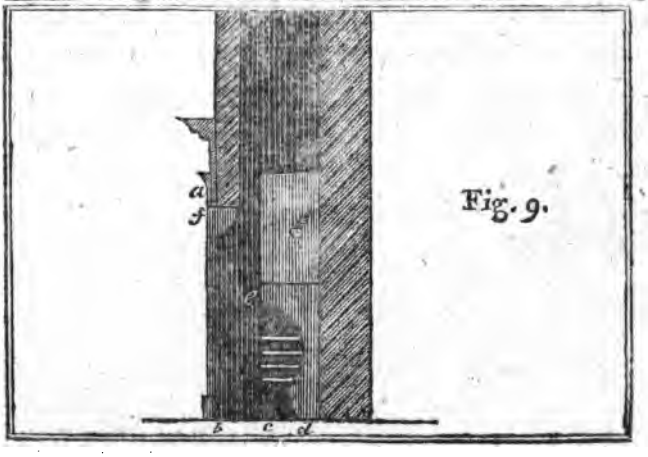


Fig. 9.

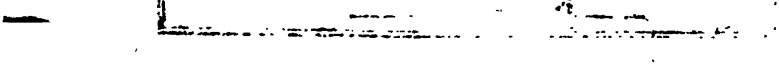


Fig. 10.

This Figure ſhows how the covings are to be placed when the front of the covings (*a* and *b*) do not come ſo far forward as the front of the opening of the Fire-place, or the jambs (A and B).

See page 349.

Fig. 11.

This Figure ſhows how the width and obliquity of the covings are to be accommodated to the width of the back of the Fire-place, in caſes where it is neceſſary to make the back very wide.

See page 350.

Fig. 10.

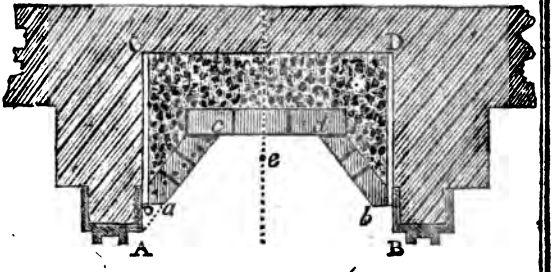
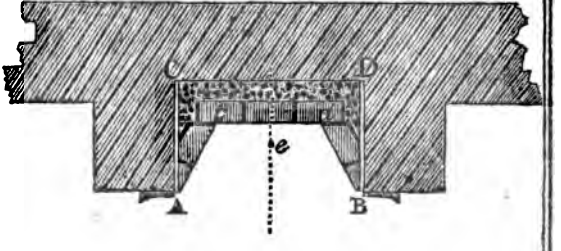


Fig. M.



Scale of 1 2 3 4 5 Feet

Fig. 12.

This Figure ſhows how an inſtrument called a bevel, (*m n*), uſeful in laying out the work in altering Chimney Fire-places, may be conſtructed.

See page 350.

Fig. 13.

This ſhows how, when the breaſt of a Chimney (*d*) is too high, it may be brought down by means of a wall (*b*) placed under the mantle, and a coating of plaſter, which in this Figure is repreſented by the part marked by dots.

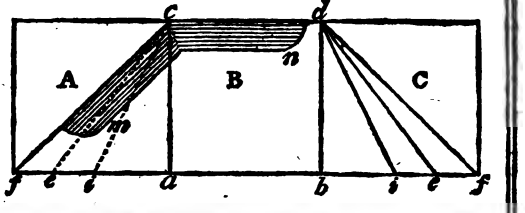
See page 352.

Fig. 14.

This ſhows how the breaſt of a Chimney may be brought down merely by a coating of plaſter.

See page 352.

Fig. 12.



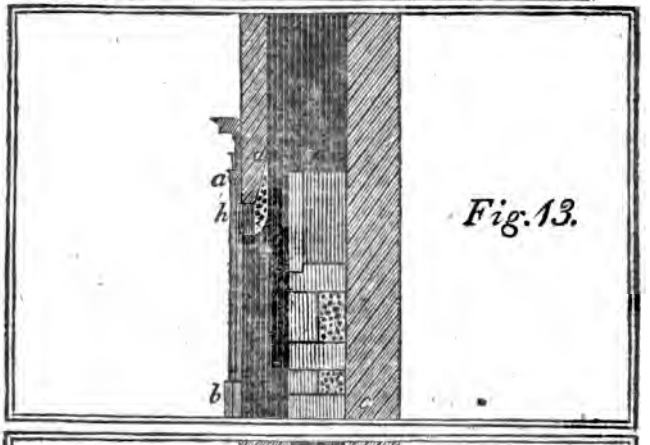


Fig. 13.

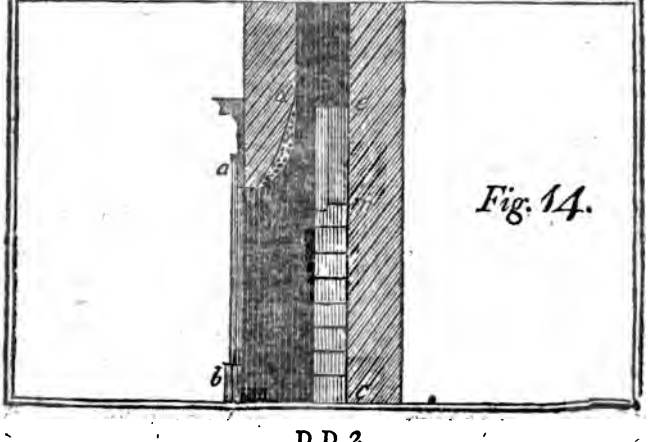


Fig. 14.

ESSAY V.

A

SHORT ACCOUNT

OF

SEVERAL PUBLIC INSTITUTIONS

Lately formed in BAVARIA.

TOGETHER WITH THE

APPENDIX TO THE FIRST VOLUME.

ESSAY V.

A ſhort Account of the MILITARY ACADEMY *at* MUNICH.

THOUGH it is certain that too much learning is rather diſadvantageous than otherwiſe to the lower claſſes of the people;—that the introduction of a ſpirit of philoſophical inveſtigation,—literary amuſement,—and metaphyſical ſpeculation, among thoſe who are deſtined by fortune to gain their livelihood by the ſweat of their brow, rather tends to make them diſcontented and unhappy, than to contribute any thing to their real comfort and enjoyments; yet, there appears, now and then, a native genius, in the moſt humble ſtations, which it would be a pity not to be able to call forth into activity. It was principally with a view to bring forward ſuch *extraordinary talents*, and to employ them uſefully in the public ſervice, that the *Military Academy* at Munich was inſtituted.

This Academy, which conſiſts of 180 eleves, or pupils, is divided into three claſſes. The *firſt claſs*, which is deſigned for the education of orphans and other children of the poorer claſs of Military Officers, and thoſe employed in the Civil Departments of the State, conſiſts of thirty pupils, who are received *gratis*, from the age of eleven to thirteen years, and who remain in the Academy four years. The *ſecond claſs*, which is deſigned to aſſiſt the poorer nobility, and leſs opulent among the merchants, citizens, and ſervants of government, in giving their ſons a good general education, conſiſts of ſixty pupils, who are received from the age of eleven to fifteen years, and who pay to the Academy twelve florins a month; for which ſum they are fed, clothed, and inſtructed. The *third claſs*, conſiſting of ninety pupils, from the age of fifteen to twenty years, who are all admitted *gratis*, is deſigned principally to bring forward ſuch youths among the lower claſſes of the people as ſhow evident ſigns of *uncommon talents* and genius, joined to a ſound conſtitution of body, and a good moral character.

All Commanding Officers of regiments, and Public Officers in Civil Departments, and all Civil Magiſtrates, are authorized and *invited* to recommend ſubjects for this claſs of the Academy, and they are not confined in their choice to any particular ranks of ſociety, but they are allowed to recommend perſons of the loweſt extraction, and moſt obſcure origin. Private ſoldiers, and the children of ſoldiers, and even the children of the meaneſt mechanics

mechanics and day-labourers, are admiſſible, provided they poſſeſs the neceſſary requiſites; namely, *very extraordinary natural genius*, a healthy conſtitution, and a good character: but if the ſubject recommended ſhould be found wanting in any of theſe requiſite qualifications, he would not only be refuſed admittance into the Academy, but the perſon who recommended him would be very ſeverely reprimanded.

The greateſt ſeverity is neceſſary upon theſe occaſions, otherwiſe it would be impoſſible to prevent abuſes. An eſtabliſhment, deſigned for the encouragement of genius, and for calling forth into public utility talents which would otherwiſe remain buried and loſt in obſcurity, would ſoon become a job for providing for relations and dependants.

One circumſtance, relative to the internal arrangement of this Academy, may, perhaps, be thought not unworthy of being particularly mentioned, and that is the very moderate expence at which this inſtitution is maintained. By a calculation, founded upon the experience of four years, I find that the whole Academy, conſiſting of 180 pupils, with profeſſors and maſters of every kind, ſervants, clothing, board, lodging, fire-wood, light, repairs, and every other article, (houſe-rent alone excepted,) amounts to no more than 28,000 florins a-year, which is no more than 155 florins, or about *fourteen pounds ſterling a-year for each pupil*; a ſmall ſum indeed, conſidering the manner in which they are kept, and the education they receive.

Though this Academy is called a *Military Academy*, it is by no means confined to the education of thoſe who are deſtined for the army; but it is rather an eſtabliſhment of general education, where the youth are inſtructed in every ſcience, and taught every bodily exerciſe, and perſonal accompliſhment, which conſtitute a liberal education; and which fits them equally for the ſtation of a private gentleman,—for the ſtudy of any of the learned profeſſions,—or for any employment, civil or military, under the government.

As this inſtitution is principally deſigned as a nurſery for genius,—as a gymnaſium for the formation of men,—for the formation of *real men*, poſſeſſed of ſtrength and character, as well as talents and accompliſhments, and capable of rendering eſſential ſervice to the ſtate; at all public examinations of the pupils, the heads of all the public departments are invited to be preſent, in order to witneſs the progreſs of the pupils, and to mark thoſe who diſcover talents peculiarly uſeful in any particular department or public employment.

How far the influence of this eſtabliſhment may extend, time muſt diſcover. It has exiſted only ſix years; but even in that ſhort period, we have had ſeveral inſtances of very uncommon talents having been called forth into public view, from the moſt obſcure ſituations. I only wiſh that the inſtitution may be allowed to ſubſiſt*.

* Since the publication of the firſt edition of this Eſſay, this uſeful eſtabliſhment has not declined.

An Account of the Means uſed to improve the BREED *of* HORSES, *and* HORNED CATTLE, *in* BAVARIA *and the* PALATINATE.

THOUGH many parts of the Elector's dominions are well adapted for the breeding of fine horſes, and great numbers of horſes are actually bred *, yet no great attention had for many years been paid to the improvement of the breed; and moſt of the horſes of diſtinction, ſuch as were uſed by the nobility as ſaddle-horſes and coach-horſes, were imported from Holſtein and Mecklenburg.

Being engaged in the arrangement of a new military ſyſtem for the country, it occurred to me that, in providing horſes for the uſe of the army, and particularly for the train of artillery, ſuch meaſures might be adopted as would tend much to improve the breed of horſes throughout the country; and my propoſals meeting with the approbation of his Moſt Serene Electoral Highneſs, the plan was carried into execution in the following manner:

A number of fine mares were purchaſed with money taken from the military cheſt, and being marked with an M (the initial of *Militaria*), in a

* The number of horſes in Bavaria alone amount to above 160,000.

circle, upon the left hip, with a hot iron, they were given to ſuch of the peaſants, owning or leaſing farms proper for breeding good horſes, as applied for them. The conditions upon which theſe brood mares were given away were as follows:

They were, in the firſt place, given away *gratis*, and the perſon who received one of them is allowed to conſider her as his own property, and uſe her in any kind of work he thinks proper; he is, however, obliged not only to keep her, and not to ſell her, or give her away, but he is alſo under obligations to keep her as a *brood mare*, and to have her regularly covered every ſeaſon, by a ſtallion pointed out to him by the commiſſioners, who are put at the head of this eſtabliſhment. If ſhe dies, he muſt replace her with another *brood mare*, which muſt be approved by the commiſſioners, and then marked.—If one of theſe mares ſhould be found not to bring good colts, or to have any blemiſh, or eſſential fault or imperfection, ſhe may be changed for another.

The ſtallions which are provided for theſe mares, and which are under the care of the commiſſioners, are provided *gratis*; and the foals are the ſole property of thoſe who keep the mares, and they may ſell them, or diſpoſe of them, when and where, and in any way they may think proper, in the ſame manner as they diſpoſe of any other foal, brought by any other mare.

In caſe the army ſhould be obliged to take the field, *and in no other caſe whatever*, thoſe who are in poſſeſſion of theſe mares are obliged either

to

to return them, or to furniſh, for the uſe of the army, another horſe fit for the ſervice of the artillery.

The advantages of this arrangement to the army are obvious. In caſe of an emergency, horſes are always at hand, and theſe horſes being bought in time of peace, coſt much leſs than it would be neceſſary to pay for them, were they to be purchaſed in a hurry upon the breaking out of a war, upon which occaſions they are always dear, and ſometimes not to be had for money.

It may, perhaps, be objected, that the money being laid out ſo long before the horſes are wanted, the loſs of the intereſt of the purchaſe-money ought to be taken into the account; but as large ſums of money muſt always be kept in readineſs in the military cheſt, to enable the army to take the field ſuddenly, in caſe it ſhould be neceſſary; and as a part of this money muſt be employed in the purchaſe of horſes; it may as well be laid out beforehand, as to lie dead in the military cheſt till the horſes are actually wanted; conſequently the objection is not founded.

I wiſh I could ſay, that this meaſure had been completely ſucceſsful; but I am obliged to own, that it has not anſwered my expectations. Six hundred mares only were at firſt ordered to be purchaſed and diſtributed; but I had hopes of ſeeing that number augmented ſoon to as many thouſands; and I had even flattered myſelf with an idea of the poſſibility of placing in this manner among the peaſants, and conſequently having conſtantly in

in readineſs, without any expence, a ſufficient number of horſes for the whole army; for the cavalry as well as for the artillery and baggage; and I had formed a plan for collecting together and exerciſing, every year, ſuch of theſe horſes as were deſtined for the ſervice of the cavalry, and for permitting their riders to go on furlough with their horſes: in ſhort, my views went to the forming of an arrangement, very economical, and in many reſpects ſimilar to that of the ancient feudal military ſyſtem; but the obſtinacy of the peaſantry prevented theſe meaſures being carried into execution. Very few of them could be prevailed upon to accept of theſe horſes; and in proportion as the terms upon which they were offered to them were apparently advantageous, their ſuſpicions were increaſed, and they never would be perſuaded that there was not ſome trick at the bottom of the ſcheme, to over-reach them.

It is poſſible that their ſuſpicions were not a little increaſed by the malicious inſinuations of perſons, who, from motives too obvious to require any explanation, took great pains at that time to render abortive every public undertaking in which I was engaged. But be that as it may, the fact is, I could never find means to remove theſe ſuſpicions entirely, and I met with ſo much difficulty in carrying the meaſure into execution, that I was induced at laſt to abandon it, or rather to poſtpone its execution to a more favourable moment. Some few mares (two or three hundred) were placed in different parts of the country; and ſome very fine colts

colts have been produced from them, during the ſix years that have elapſed ſince this inſtitution was formed; but theſe ſlow advances do not ſatisfy the ardour of my zeal for improvement; and if means are not found to accelerate them, Bavaria, with all her natural advantages for breeding fine horſes, muſt be obliged, for many years to come, to continue to import horſes from foreign countries.

'My attempts to improve the breed of horned cattle, though infinitely more confined, have been proportionally much more ſucceſsful. Upon forming the public garden at Munich, as the extent of the grounds is very conſiderable, the garden being above ſix Engliſh miles in circumference, and the ſoil being remarkably good, I had an opportunity of making, within the garden, a very fine and a very valuable farm; and this farm being ſtocked with about thirty of the fineſt cows that could be procured from Switzerland, Flanders, Tyrol, and other places upon the Continent famous for a good breed of horned cattle; and this ſtock being refreſhed annually with new importations of cows as well as bulls, all the cows which are produced, are diſtributed in the country, being ſold to any perſon of the country who applies for them, *and with promiſe to rear them*, at the ſame low prices at which the moſt ordinary calves of the common breed of the country are ſold to the butchers.

Though this eſtabliſhment has exiſted only about ſix years, it is quite ſurpriſing what a change it has produced in the country. As there is a great reſort

reſort to Munich from all parts of the country, it being the capital, and the reſidence of the Sovereign, the new Engliſh garden (as it is called), which begins upon the ramparts of the town, and extends near two Engliſh miles in length, and is always kept open, is much frequented, and there are few who go into the garden without paying a viſit to the cows, which are always at home. Their ſtables, which are concealed in a thick wood behind a public coffee-houſe or tavern in the middle of the garden, are elegantly fitted up and kept with great care; and the cows, which are not only large, and remarkably beautiful, but are always kept perfectly clean, and in the higheſt condition, are an object of public curioſity. Thoſe who are not particularly intereſted in the improvement of cattle, go to ſee them as beautiful and extraordinary animals; but farmers and connoiſſeurs go to *examine* them, —to compare them with each other,—and with the common breed of the country, and to get information with reſpect to the manner of feeding them, and the profits derived from them; and ſo rapidly has the flame of improvement ſpread throughout every part of Bavaria from this ſmall ſpark, that I have no doubt but in a very few years the breed of horned cattle will be quite changed.

Not ſatisfied with the ſcanty ſupply furniſhed from the farm in the Engliſh garden, ſeveral of the nobility, and ſome of the moſt wealthy and enterpriſing of the farmers, are ſending to Switzerland, and other diſtant countries famous for fine cattle,

for

for cows and bulls; and the good effects of theſe exertions are already viſible in many parts of the country.

How very eaſy would it be by ſimilar means to introduce a ſpirit of improvement in any country; and where ſovereigns do not make public gardens to bring together a concourſe of people, individuals might do it by private ſubſcription, or at leaſt they might unite together and rent a large farm in the neighbourhood of the capital, for the purpoſe of making uſeful experiments. If ſuch a farm were well managed, the produce of it would be more than ſufficient to pay all the expences attending it; and if the grounds and fields were laid out with taſte—if good roads for carriages and for thoſe who ride on horſeback were made round it, and between all the fields—if the ſtables were elegantly fitted up—filled with beautiful cattle, kept perfectly clean and neat; and if a handſome inn were erected near the buildings of the farm, where thoſe who viſited it might be furniſhed with refreſhment, it would ſoon become a place of public reſort; and improvements in agriculture would become *a faſhionable amuſement;* the ladies even would take pleaſure in viewing from their carriages the buſy and moſt intereſting ſcenes of rural induſtry, and it would no longer be thought vulgar to underſtand the myſteries of Ceres.

Why ſhould not Parliament purchaſe, or rent ſuch a farm in the neighbourhood of London, and put it under the direction of the Board of Agriculture? The expence would be but a mere trifle, if anything, and the inſtitution would not only be uſeful,

but

but extremely intereſting; and it would be an inexhauſtible ſource of rational and innocent amuſement, as well as of improvement, to vaſt numbers of the moſt reſpectable inhabitants of this great metropolis.

In former times, ſtateſmen conſidered the amuſement of the public as an object of conſiderable importance, and pains were taken to render the public amuſements uſeful in forming the national character.

An Account of the Meaſures adopted for putting an End to USURY *at* MUNICH.

ANOTHER meaſure, more limited in its operations than thoſe before mentioned, but which notwithſtanding was productive of much good, was adopted, in which a part of the treaſure which was lying dead in the military cheſt was uſefully employed for the relief of a conſiderable number of individuals, employed in ſubordinate ſtations under the government, who ſtood in great need of aſſiſtance.

A practice productive of much harm to the public ſervice, as well as to individuals, had prevailed for many years in Bavaria in almoſt all the public departments of the ſtate, that of appointing a great number of ſupernumerary clerks, ſecretaries, counſellors, &c. who, ſerving without pay, or with only ſmall allowances, were obliged, in order to ſubſiſt till ſuch time as they ſhould come into the receipt of the regulated ſalaries annexed to their offices, to contract debts to a conſiderable amount; and as many of them had no other ſecurity to give for the ſums borrowed, than their promiſe to repay them when it ſhould be in their power, no money-lender who contented himſelf with legal intereſt for his money would truſt them; and of courſe they were obliged

to

to have recourſe to Jews and other uſurers, who did not afford them the temporary aſſiſtance they required, but upon the moſt exorbitant and ruinous conditions; ſo that theſe unfortunate people, inſtead of finding themſelves at their eaſe upon coming into poſſeſſion of the emoluments of their offices, were frequently ſo embarraſſed in their circumſtances as to be obliged to mortgage their ſalaries for many months to come, to raiſe money to ſatisfy their clamorous creditors; and from this circumſtance, and from the general prevalence of luxury and diſſipation among all ranks of ſociety, the anticipation of ſalaries had become ſo prevalent, and the conditions upon which money was advanced upon ſuch ſecurity was ſo exorbitant, that this alarming evil called for the moſt ſerious attention of the government.

The intereſt commonly paid for money, advanced upon receipts for ſalaries, was 5 *per cent. per month*, or three creutzers, for the florin; and there were inſtances of even much larger intereſt being given.

The ſevereſt laws had been made to prevent theſe abuſes, but means were conſtantly found to evade them; and, inſtead of putting an end to the evil, they frequently ſerved rather to increaſe it.

It occurred to me, that as any tradeſman may be ruined by another who can afford to underſell him, ſo it might be poſſible to ruin the uſurers, by ſetting up the buſineſs in oppoſition to them, and furniſhing money to borrowers upon more reaſonable terms. In order to make this experiment, a *caiſe of advance* (Vorſchuſs Caſſa), containing 30,000 florins, was

was eſtabliſhed at the military pay-office, where any perſon in the actual receipt of a ſalary or penſion under government, in any department of the ſtate, civil or military, might receive in advance, upon his perſonal application, his ſalary or penſion for one or for two months upon a deduction of intereſt at the rate of 5 *per cent. per annum*, or one twelfth part of the intereſt commonly extorted by the Jews and other uſurers upon thoſe occaſions.

The great number of perſons who have availed themſelves of the advantages held out to them by this eſtabliſhment, and who ſtill continue to avail themſelves of them, ſhows how effectual the eſtabliſhment has been to remedy the evil it was deſigned to eradicate.

The number of perſons who apply to this cheſt for aſſiſtance each month, is at a medium from 300 to 400, and the ſums actually in advance, amount in general to above 20,000 florins.

As no money is advanced from this cheſt but upon government ſecurities, that is to ſay, upon receipts for ſalaries, and penſions, there is no riſque attending the operation; and as the intereſt ariſing from the money advanced, is more than ſufficient to defray the expence of carrying on the buſineſs, there is no loſs whatever attending it.

An Account of a SCHEME *for employing the* SOLDIERY *in* BAVARIA *in repairing the Highways and Public Roads.*

I HAD formed a plan, which, if it had been executed, would have rendered the military poſts or patroles of cavalry eſtabliſhed in all parts of the Elector's dominions much more intereſting, and more uſeful than they now are *. I wiſhed to have employed the ſoldiery excluſively in the repairs of all the highways in the country, and to have united this undertaking with the eſtabliſhment of permanent military ſtations, on all the high roads, for the preſervation of order and public tranquillity.

It is a great hardſhip upon the inhabitants in any country to be obliged to leave their own domeſtic affairs, and turn out with their cattle and ſervants, when called upon, to work upon the public roads; but this was peculiarly grievous in Bavaria, where labourers are ſo ſcarce that the farmers are frequently obliged to leave a great part of their grounds uncultivated for want of hands.

My plan was to meaſure all the public roads from the capital cities in the Elector's dominions to the frontiers, and all croſs country roads; placing mile-ſtones regularly numbered upon each road, at

* A particular account of theſe military poſts is given in the Second Chapter of the Firſt Eſſay.

regular

regular diſtances of one hour, or half a German mile from each other;—to divide each road into as many ſtations as it contained mile-ſtones; each ſtation extending from one mile-ſtone to another; and to erect in the middle of each ſtation, by the road-ſide, a ſmall houſe, with ſtabling for three or four horſes, and with a ſmall garden adjoining to it;—to place in each of theſe houſes, a ſmall detachment of cavalry of three or four men,—a ſoldier on furlough, employed to take care of the road and keep it in repair within the limits of the ſtation;—an invalid ſoldier to take care of the houſe, and to receive orders and meſſages in the abſence of the others,—to take care of the garden, to provide proviſions, and cook for the family.

If any of the ſoldiers ſhould happen to be married, his wife might have been allowed to lodge in the houſe, upon condition of her aſſiſting the invalid ſoldier in this ſervice; or a penſioned ſoldier's widow might have been employed for the ſame purpoſe.

To preſerve order and diſcipline in theſe eſtabliſhments, it was propoſed to employ active and intelligent non-commiſſioned officers as overſeers of the highways, and to place theſe under the orders of ſuperior officers appointed to preſide over more extenſive diſtricts.

It was propoſed likewiſe to plant rows of uſeful trees by the road-ſide from one ſtation to another throughout the whole country, and it was calculated that after a certain number of years the produce of thoſe trees would have been nearly ſufficient to defray all the expences of repairing the roads.

Such an arrangement, with the ſtriking appearance of order and regularity that would accompany it, could not have failed to intereſt every perſon of feeling who ſaw it; and I am perſuaded that ſuch a ſcheme might be carried into execution with great advantage in moſt countries where ſtanding armies are kept up in time of peace. The reaſons why this plan was not executed in Bavaria at the time it was propoſed are too long, and too foreign to my preſent purpoſe to be here related. Perhaps a time may come when they will ceaſe to exiſt.

APPENDIX.

APPENDIX.

N° I.

ADDRESS *and* PETITION *to all the Inhabitants and Citizens of* MUNICH, *in the Name of the real Poor and Diſtreſſed.*

(Tranſlated from the German.)

TOO long have the public honour and ſafety, morality and religion, called aloud for the extirpation of an evil, which, though habit has rendered it familiar to us, always appears in all its horrid and diſguſting ſhapes; and whoſe dangerous effects ſhow themſelves every where, and are increaſing every day.

Too long already have the virtuous citizens of this metropolis ſeen with concern the growing numbers of the Beggars, their impudence, and their open and ſhameleſs debaucheries; yet idleneſs and mendicity (thoſe peſts of ſociety) have been ſo feebly counteracted, that, inſtead of being checked and ſuppreſſed, they have triumphed over thoſe weak attempts to reſtrain them, and acquiring freſh vigour and activity from ſucceſs, have ſpread their baleful influence far and wide.

What well-affected citizen can be indifferent to the ſhame that devolves upon himſelf and upon his country, when whole ſwarms of diſſolute rabble, covered with filthy rags, parade the ſtreets, and by tales of real or of fictitious diſtreſs—by clamorous importunity, inſolence, and rudeneſs, extort involuntary contributions from every traveller? When no retreat is to be found, no retirement where poverty, miſery, and impudent hypocriſy, in all their diſguſting and hideous forms, do not continually intrude; when no one is permitted to enjoy a peaceful moment, free from their importunity, either in the churches or in public places, at the tombs of the dead, or at the places of amuſement? What avail the marks of affluence and proſperity which appear in the dreſs and equipage of individuals, in the elegance of their dwellings, and in the magnificence and ſplendid ornaments of our churches, while the voice of woe is heard in every corner, proceeding from the lips of hoary age worn out with labour; from ſtrong and healthy men capable of labour; from young infants and their ſhameleſs and abandoned parents? What reputable citizen would not bluſh, if among the inmates of his houſe, ſhould be found a miſerable wretch, who by tales of real or fictitious diſtreſs ſhould attempt to extort charitable donations from his friends and viſitors? What opinion would he expect would be formed of his underſtanding—of his heart—of his circumſtances? What then muſt the foreigner and traveller think, who, after having ſeen no veſtige of Beggary in the neighbouring countries,

countries, ſhould, upon his arrival at Munich, find himſelf ſuddenly ſurrounded by a ſwarm of groaning winching wretches, beſieging and following his carriage?

The public honour calls aloud to have a ſtop put to this diſgraceful evil.

The public ſafety alſo demands it. The dreadful conſequences are obvious, which muſt enſue when great numbers of healthy individuals, and whole families, live in idleneſs, without any ſettled abode, concluding every day with ſchemes for defrauding the public of their ſubſiſtence for the next: where the children belonging to this numerous ſociety are made uſe of to impoſe on the credulity of the benevolent, and where they are regularly trained, from their earlieſt infancy, in all thoſe infamous practices, which are carried on ſyſtematically, and to ſuch an alarming extent among us.

Great numbers of theſe children grow up to die under the hands of the executioner. The only inſtruction they receive from their parents is how to cheat and deceive; and daily practice in lying and ſtealing from their very infancy, renders them uncommonly expert in their infamous trade. The records of the courts of juſtice ſhow in innumerable inſtances, that early habits of Idleneſs and Beggary are a preparation for the gallows; and among the numerous thefts that are daily committed in this capital, there are very few that are not committed by perſons who get into the houſes under the pretext of aſking for charity.

What

What perſon is ignorant of theſe facts? and who can demand farther proofs of the neceſſity of a ſolid and durable inſtitution, for the relief and ſupport of the Poor?

The reader would be ſeized with horror, were we to unveil all the ſecret abominations of theſe abandoned wretches. They laugh alike at the laws of God and of man. No crime is too horrible and ſhocking for them, nothing in heaven or on the earth too holy not to be profaned by them without ſcruple, and employed with conſummate hypocriſy to their wicked purpoſes *.

Whence is it that this evil proceeds? Not from the inability of this great capital to provide for its Poor; for no city in the world, of equal extent and population, has ſo many hoſpitals for the ſick and infirm, and other inſtitutions of public charity. Neither is it owing to the hard-heartedneſs of the inhabitants; for a more feeling and charitable people cannot be found. Even the uncommonly great and increaſing numbers of the Beggars ſhow the kindneſs and liberality of the inhabitants; for theſe vagabonds naturally collect together in the greateſt

* Suffice it to mention one among numberleſs facts, which might be brought to prove theſe aſſertions:

The Beggars of our capital carry on an increaſing and very lucrative trade, with confeſſional and communion teſtimonials, which they ſell to people who daringly tranſgreſs the holy eccleſiaſtical laws, by neglecting to confeſs and receive the holy ſacrament of the Lord's Supper at Eaſter. Some of theſe impious wretches receive the ſacrament, at leaſt twice in a day, in order not to loſe their cuſtomers; if the demands for communion teſtimonials are great, or come late.——Ye prieſts and preachers of the goſpel, can you ſtill forbear raiſing your voices againſt Beggars?

numbers,

numbers, where their trade can be carried on to the greateſt advantage.

The injudicious diſpenſation of alms is the real and only ſource of this evil.

In every community there are certainly to be found a greater or leſs number of poor and diſtreſſed perſons, who have juſt claims on the public charity. This is alſo the caſe at Munich; and nature dictates to us the duty of adminiſtering relief to ſuffering humanity, and more eſpecially to our poor and diſtreſſed fellow-citizens; and our Holy Religion promiſes eternal rewards to him who ſupports and relieves the poor and needy, and threatens everlaſting damnation to him who ſends them away without relief.

The Holy Fathers teach, that when there are no other means left for the relief and ſupport of the Poor, the ſuperfluous ornaments of the churches may be diſpoſed of, and even the ſacred veſſels melted down and ſold for that purpoſe.

But what ſhall we think, when we ſee thoſe very perſons, who profeſs to live after the rules and precepts laid down in the word of God, act diametrically contrary to them?

Such, doubtleſs, is the fatal conduct of thoſe who are induced by a miſtaken compaſſion to laviſh their alms upon Beggars, and obſtruct the relief of the really indigent.—Alms that fruſtrate a good and uſeful inſtitution cannot be meritorious, or acceptable to God: and no maxim is leſs founded in truth, than that the merit of the giver is undiminiſhed by the unworthineſs of the object.—

The

The truly diſtreſſed are too baſhful to mix with the herd of common Beggars; neceſſity, it is true, will ſometimes conquer their timidity, and compel them publicly to ſolicit charity; but their modeſt appeal is unheard or unnoticed, whilſt a diſſolute vagabond, who exhibits an hypocritical picture of diſtreſs,—a drunken wretch, who pretends to have a numerous family and to be perſecuted by misfortune,—or an impudent unfeeling woman, who excites pity by the tears and cries of a poor child whom ſhe has hired perhaps for the purpoſe, and tortured into ſuffering, ſteps daringly forward to intercept the alms of the charitable; and the well-intentioned gift which ſhould relieve the indigent is the prize of impudence and impoſition, and the ſupport of vice and idleneſs. —What then is left for the modeſt object of real diſtreſs, but to retire diſpirited and hide himſelf in the obſcurity of his cottage, there to languiſh in miſery, whilſt the bolder Beggar conſumes the ill-beſtowed gift in mirth and riot? And, yet, the charitable donor flatters himſelf that he has performed an exemplary duty!

We earneſtly entreat every citizen and inhabitant of this capital, each in his reſpective ſtation, no longer to countenance mendicity by ſuch a miſapplication of their well-meant charity; contributing thus to augment the fatal conſequences of the evil itſelf, as well as to impede the relief of the really neceſſitous.

We are firmly perſuaded, that by pointing out to our fellow-citizens a method by which they may exerciſe their benevolence towards the indigent and diſtreſſed

treſſed in a meritorious manner, we ſhall gratify their pious zeal and humanity, and at the ſame time eſſentially promote the honour and ſafety of the ſtate, and the intereſts of ſound morality and religion.

And this is the ſole object of the *Military Workhouſe*, which has been inſtituted by the command of his Electoral Highneſs, where, from this time forward, all who are able to work may find employment and wages, and will be cloathed and fed.—*There* will the really indigent find a ſecure aſylum, and thoſe unfortunate perſons who are a prey to ſickneſs and infirmity, or are worn out with age, will be effectually relieved.—

We beg you not to liſten to the falſe repreſentations which may, perhaps, be made to calumniate this inſtitution, by putting it on a level with former imperfect eſtabliſhments.—Why ſhould not an inſtitution proſper at Munich, which has already been ſucceſsful in other places, particularly at Manheim, where above 800 perſons are daily employed in the Military Workhouſe, and heap benedictions on its benevolent founder?—Have the inhabitants of this town leſs good ſenſe, leſs humanity, or leſs zeal for the good of mankind? No—it would be an inſult on the patriotiſm of our fellow-citizens, were we to doubt of their readineſs to concur in our undertaking.

The only efficacious way of promoting an inſtitution ſo intimately connected with the ſafety, honor, and welfare of the ſtate, and with the intereſts of religion and morality, is a general reſolution of the inhabitants to eſtabliſh a voluntary monthly contribution,

tribution, and ſtrictly prohibit the abominable and degrading practice of ſtreet-begging; the unlimited exerciſe of which, notwithſtanding its fatal and diſgraceful conſequences, is perhaps more glaringly indulged in Munich than in any other city in Germany.

In vain will the inſtitution be oppoſed by the prejudices, or the meanneſs and malice of perſons who are themſelves uſed to mendicity, or to exerciſe an inſolent dominion over Beggars.

It will ſubſiſt in ſpite of all their efforts; and we have the fulleſt confidence that the generous and well-diſpoſed inhabitants of this city will be ſenſible how injurious the habits of encouraging public mendicity are, when an opportunity is offered them of contributing to an inſtitution where the really indigent are ſure to find aſſiſtance, and where the benevolent Chriſtian is certain that his neighbours and fellow-citizens are benefited by his charitable donations.

The ſimpleſt and moſt effectual way of aſcertaining the extent of ſuch contribution is to form a liſt of all the citizens and inhabitants of the town, with the name of the ſtreet, and number of the houſe they inhabit. This regiſter may be called an Alms Book. It will be preſented to each inhabitant, that he may put down the ſum which he means voluntarily to ſubſcribe every month towards the ſupport of the Poor. The ſmalleſt donation will be gratefully received, and the objects who are relieved by them will pray for them to the Almighty Rewarder of all good actions.

As

As this charitable contribution is to be abſolutely voluntary, every one, whatever be his rank or property, will ſubſcribe as he pleaſes, a greater or a leſs ſum, or none at all. The names of the benefactors and their donations will be printed and publiſhed quarterly, that every one may know and acknowledge the zealous friends of humanity, by whoſe aſſiſtance an evil of ſuch magnitude, ſo long and ſo univerſally complained of, will be finally rooted out.

We requeſt that the public will not oppoſe ſo ſure and effectual a mode of granting relief to the Poor, but rather give their generous ſupport to an undertaking which cannot but be productive of much good, and acceptable in the ſight of Heaven.

To convince every one of the faithful application of theſe contributions, an exact detail both of the receipt and expenditure of the inſtitution will be printed and laid before the public every three months; and every ſubſcriber will be allowed to inſpect and examine the original accounts whenever he ſhall think proper.

It muſt be obvious to every one, even to perſons of the moſt ſuſpicious diſpoſitions, that this inſtitution is perfectly diſintereſted, and owes its origin entirely to pure benevolence, and an active zeal for the public good, when it is known that a Committee appointed by his Electoral Highneſs, under the direction of the Preſidents of the Council of War, the Supreme Regency, and the Eccleſiaſtical Council, will have the ſole adminiſtration and direction of the affairs of the inſtitution, and that the

the monthly collections of alms will be made by creditable persons properly authorised; and that no salary, or emoluments of any kind, will be levied on the funds of the institution, either for salaries for the collectors, or any other persons employed in the service of the institution, as will clearly appear by the printed quarterly accounts. By such precautions, we trust, we shall obviate all possible suspicions, and inspire every unprejudiced person with a firm confidence in this useful institution.

Henceforward, then, the infamous practice of begging in the streets will be no longer tolerated in Munich, and the public are from this moment exonerated from a burden which is not less troublesome to individuals than it is disgraceful to the country. Who can doubt the co-operation of every individual for the accomplishment of so laudable an undertaking? We trust that no one will encourage idleness, by an injudicious and pernicious profusion of alms given to Beggars; and by promoting the most unbridled licentiousness, make himself a participator in the dangerous consequences of mendicity, and share the guilt of all those crimes and offences which endanger the welfare of the state, injure the cause of religion, and insult the distresses of the really indigent.

No longer will these vagabonds impose on good-nature and benevolence, by false pretences, by ill-founded complaints of the inefficacy of the provision for the Poor, or by any other artifices; nor can they escape the strict and constant vigilance with which

which they will in future be watched; when every perſon they meet will direct them to the Houſe of Induſtry, inſtead of giving them money.

It is this regulation alone which can effectuate our purpoſe, a regulation enforced in the days of primitive Chriſtianity, and ſanctioned by Religion itſelf; the charitable gifts of the wealthier Chriſtians being in thoſe days all depoſited in a common treaſury, for the benefit of their poorer and diſtreſſed Brethren, and not ſquandered away in the encouragement of diſſolute idleneſs.

We therefore entreat and beſeech the public in general, in the name of ſuffering humanity, and of that Almighty Being who cannot but regard ſo laudable an enterpriſe with an eye of favour, to give every poſſible ſupport to our deſign. And we truſt that the clergy of every denomination, but eſpecially the public preachers, will exert their ſplendid abilities to animate their congregations to cooperate with us in this great and important undertaking.

N° II.

SUBSCRIPTION LISTS *distributed among the Inhabitants of* MUNICH, *in the Month of* JANUARY 1790, *when the Eſtabliſhment for the Relief of the Poor in that City was formed.*

Tranſlated from the Original German.

VOLUNTARY SUBSCRIPTIONS

FOR

The RELIEF and SUPPORT of

The Induſtrious, Sick, and Helpleſs POOR,

AND

For the total Extirpation of VAGRANTS and STREET-BEGGARS,

In the CITY of MUNICH.

REMARKS.

THESE voluntary ſubſcriptions will be collected monthly, namely, on the laſt Sunday morning of every month, under the direction of the Committee of Governors of the Inſtitution for the Poor; conſiſting of the Preſident of the Council of War,—the Preſident of the Council of the Regency,

gency,—and the Preſident of the Eccleſiaſtical Council * ; and the amount of theſe collections will always be regularly noted down in books kept for that purpoſe; and at the end of every three months a particular detailed account of the application of theſe ſums will be printed, and given *gratis* to the ſubſcribers and to the public.

No part of theſe voluntary contributions will ever be taken, or appropriated to the payment of ſalaries, gratuities, or rewards to any of thoſe perſons who may be employed in carrying on the buſineſs of the inſtitution; but the whole amount of the ſums collected will be faithfully applied to the relief and ſupport of the Poor, and to that charitable purpoſe alone, as the accounts of the expenditures of the inſtitution, which will be publiſhed from time to time, will clearly ſhow and demonſtrate.—All the perſons neceſſary to be employed in the affairs of this eſtabliſhment, will either be ſelected from among ſuch as already are in the receipt of ſalaries, ſufficient for their comfortable maintenance from other funds; or they will be ſuch perſons, in eaſy circumſtances, as may offer themſelves voluntarily for theſe ſervices, from motives of humanity, and a diſintereſted wiſh to be inſtrumental in doing good.

As the preparations which have been made, and are making for the ſupport of the Poor, leave no doubt, but that adequate relief will be afforded to them in future, they will no longer have any pretext for begging; and all perſons are moſt earneſtly requeſted to abſtain henceforward from giving

* To theſe the Preſident of the Chamber of Finances has ſince been added.

alms to Beggars. Inſtead of giving money to ſuch perſons as they may find begging in the ſtreet, they are requeſted to direct them to the Houſe of Induſtry, where they will, without fail, receive ſuch aſſiſtance and ſupport as they may ſtand in need of and deſerve.

Thoſe perſons whoſe names are already inſerted in other liſts, as ſubſcribers to this inſtitution, are, nevertheleſs, requeſted to enter their names upon theſe family-ſheets; for though their names may ſtand on ſeveral liſts, their contributions will be called for upon one of them only, and that one will be the family-ſheet.

Thoſe perſons of either ſex, who have no families, but occupy houſes or lodgings of their own, are, notwithſtanding their being without families, requeſted to put down the amount of the monthly contributions they are willing to give to this inſtitution upon a family-ſheet, and to inſert their names in the liſt as "*head of the family.*"

Under the column deſtined for the names of "*relations and friends, living in the houſe,*" may be included ſtrangers, lodgers, boarders, &c.

The column for "*domeſtics,*" may, in like manner, ſerve, particularly in the houſes of the nobility, and other diſtinguiſhed perſons, for ſtewards, tutors, governeſſes, &c.

Each head of a family will receive two of theſe family-ſheets, namely, one with theſe Remarks, which he will keep for his information,—the other, printed on a half-ſheet of paper, and without remarks, which he will pleaſe to return to the public office of the inſtitution.

In

In caſe of a change in the family, or if one or other of the members of it ſhould think proper to increaſe or to leſſen their contributions, this alteration is to be marked upon the half-ſheet, which is kept by the head of the family; and this ſheet, ſo altered, is to be ſent to the public office of the inſtitution, to the end that theſe alterations may be made in the general liſts of the ſubſcribers; or new printed forms being procured from the public office, and filled up, theſe new liſts may be exchanged againſt the old ones.

For the accommodation of thoſe who may at any time wiſh to contribute privately to the ſupport of the inſtitution any ſums in addition to their ordinary monthly donations, the banker of the inſtitution, Mr. Dallarmi, will receive ſuch ſums deſtined for that purpoſe, as may be ſent to him privately under any feigned name, motto, or device; and for the ſecurity of the donors, accounts of all the ſums ſo received, with an account of the feigned name, motto, or device, under which each of them was ſent to the banker, will be regularly publiſhed in the Munich Gazette.

The firſt collection will be made on the laſt Sunday of the preſent month, and the following collections on the laſt Monday of every ſucceeding month, and each head of a family is reſpectfully requeſted to cauſe the contributions of his family, and of the inhabitants of his houſe, to be collected at the end of every month, by a domeſtic or a ſervant, and to keep the ſame in readineſs againſt the time of the collection.

All perſons of both ſexes, and of every age and condition, (Paupers only excepted,) are earneſtly requeſted to have their names inſerted in theſe liſts or family-ſheets; and they may reſt aſſured, that any ſum, even the moſt trifling, will be received with thankfulneſs, and applied with care to the great object of the inſtitution—the relief and encouragement of the Poor and the Diſtreſſed.

And finally, as it cannot fail to contribute very much to improve the human heart, if young perſons at an early period of life are accuſtomed to acts of benevolence,—it is recommended to parents, to cauſe all their children to put down their names as ſubſcribers to this undertaking, and this, even though the donations they may be able to ſpare may be the moſt trifling, or even if the parents ſhould be obliged to leſſen their own contributions in order to enable their children to become ſubſcribers.

☞ *The foregoing Remarks were printed on the two firſt pages of a ſheet,* 13 *inches by* 18 *inches, of ſtrong writing-paper. The following Subſcription Liſt was printed on the third page of the ſame ſheet—and alſo on a ſeparate half-ſheet of the ſame kind of paper.*

VOLUNTARY CONTRIBUTIONS for the SUPPORT of the POOR at MUNICH.

FAMILY-SHEET.

Number of the Houſe Diſtrict Street Floor.

Head of the Family } Monthly Contributions.
His Character, or } Florins. Creutzers.

Other Perſons belonging to the Family.

Wife, Children, Relations, and Friends of both Sexes living with the family. The Chriſtian Name and Sirname of each Perſon.	Monthly Contributions. Fl.	Kr.	Domeſtics, Journeymen, Menial Servants, &c. of both Sexes, the Chriſtian and Sirname of each Individual.	Monthly Contributions. Fl.	Kr.
			(At the lower corner of this half-ſheet was printed in ſmall type): "*This half-ſheet is to be ſent into the Public Office of the Inſtitution.*"		

N° III.

An Account of the RECEIPTS *and* EXPENDITURES *of the* INSTITUTION *for the* POOR *at* MUNICH *during Five Years.*

RECEIPTS.

N. B. The pound ſterling is equal to 11 florins.	In 1790	In 1791.	In 1792.	In 1793.	In 1794.	Total in 5 Years.
	Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
From monthly voluntary donations of the inhabitants, including 100 florins given monthly by his Moſt Serene Highneſs the Elector out of his private purſe; 50 florins monthly by the Electreſs Dowager of Bavaria, and 50 florins monthly by the States of Bavaria, — — — —	36,640	38,024	35,847	34,424	33,880	178,815
From the Public Treaſury a ſtated monthly allowance, intended principally to defray the expence of the police of the city, — — — — —	15,400	15,400	16,800	16,800	16,800	81,200
From voluntary donations, particularly deſtined by the donors to aſſiſt the Poor in paying their houſe-rent, —	970	1,043	800	800	802	4,415
Carried forward, — —	53,010	54,467	53,447	52,024	51,482	264,430

RECEIPTS continued.

	In 1790.	In 1791.	In 1792.	In 1793.	In 1794.	Total in 5 Years.
	Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
Brought over — —	53,010	54,467	53,447	52,024	51,482	264,430
From voluntary and unsolicited donations from the foreign merchants and traders assembled at Munich at the two annual fairs, — — — — —	179	388	388	411	390	1,756
From the courts of justice, being fines for certain petty offences, — — — — —	——	168	392	229	234	1,023
From the magistrates of the city; being the amount of sums received from musicians for licence to play in the public houses,	——	——	——	3,216	2,773	5,989
From the poor's boxes in the different churches, — —	318	177	187	610	229	1,521
From the poor's boxes at inns and taverns, — —	99	153	69	168	176	665
From private contributions sent to the banker of the Institution, under feigned names, devices, &c. — —	3,642	691	825	723	423	6,304
From legacies, — — — —	2,674	1,472	3,528	1,820	12,179	21,673
From interest of money due to the Institution, — —	48	128	48	48	——	272
From cash received in advance, — — —	3,300	4,600	1,500	——	——	9,400
From sundries, — — — —	824	3,433	910	1,752	346	7,265
Total annual Receipts, — —	64,094	65,677	61,294	61,001	70,232	320,298

EXPENDITURES.

N. B. The pound ſterling is equal to 11 florins.	In 1790.	In 1791.	In 1792.	In 1793.	In 1794.	Total in 5 Years.
	Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
Given to the Poor in alms, in ready money — —	42,080	46,410	43,055	41,933	43,189	216,667
Expended in feeding the Poor at the Public Kitchen of the Military Workhouſe, and in premiums for the encouragement of induſtry, — — — —	11,800	9,900	10,300	9,600	9,400	51,000
Given to the Poor to aſſiſt them in paying their houſe-rent, — — — — —	1,011	1,040	800	861	805	4,517
Paid for medicines adminiſtered to the Poor at their own lodgings, — — — —	450	403	350	1,150	1,500	3,853
Expended in burials, — — —	217	254	272	336	290	1,369
Given with poor children when bound apprentices, —	256	183	219	210	226	1,094
Given as an indemnification for the loſs of the right formerly enjoyed of making collections of alms among the inhabitants:						
——— To perſons who have ſuffered by fires, —	890	564	418	425	594	2,891
——— To travelling journeymen tradeſmen, —	160	187	34	35	94	510
——— To the ſiſters of the religious order of charity,	960	960	960	960	960	4,800
——— To the nuns of the Engliſh convent, —	84	72	72	72	72	372
——— To the hoſpital for lepers on the Gaſteig, —	100	360	288	540	300	1,588
Carried forward, — —	58,008	59,333	56,768	56,122	57,430	288,661

EXPENDITURES continued.

	In 1790.	In 1791.	In 1792.	In 1793.	In 1794.	Total in 5 Years.
	Florins.	Florins.	Florins.	Florins	Florins.	Florins.
Brought over, — —	58,008	59,333	56,768	56,122	57,430	288,661
Given as an indemnification for the loſs of the right formerly enjoyed of making collections of alms among the inhabitants:						
——— To the hoſpitals at Schwabing, — —	220	240	240	240	240	1,180
——— To the poor ſcholart of the German ſchool,	480	480	480	480	480	2,400
——— To the poor ſcholars of the Latin ſchool,	440	480	480	480	480	2,360
Paid to the clerks of office of police, — —	318	318	159	———	———	795
Paid to the accountant of the Inſtitution, — —	———	———	———	183	200	383
Paid to the guards of the police *, — —	1,672	1,824	912	———	———	4,408
Paid to writers employed occaſionally as clerks, —	369	199	189	250	361	1,368
Paid to printers and bookbinders, — —	506	333	150	227	301	1,517
Paid to the ſoldiers of the garriſon for arreſting Beggars,	22	6	———	———	———	28
Gratuities to the ſchoolmaſter at Charles's Gate, —	55	60	60	50	75	300
Paid various ſums due from the Inſtitution, — —	831	300	———	———	———	1,131
Paid intereſt of monies due, — — —	———	———	40	40	40	120
Money advanced for purchaſing grain, — —	———	———	———	———	1,200	1,200
Sundries, — — — —	172	234	261	645	433	1,745
Total Expenditures, — —	63,093	64,807	59,739	58,717	61,240	307,596

* Since the year 1792 the Elector, to relieve the Inſtitution from that burden, has ordered the police guards to be paid out of the Public Treaſury of the Chamber of Finances.

N° IV.

Certificate relative to the EXPENCE *of* FUEL *in the Public Kitchen of the Military Workhouſe at* MUNICH.

WE whoſe Names are underwritten certify, that we have been preſent frequently when experiments have been made to determine the expence of Fuel in cooking for the Poor in the Public Kitchen of the Military Workhouſe at Munich; and that when the ordinary dinner has been prepared for *one thouſand* perſons, the expence for Fuel has not amounted to quite twelve creutzers (leſs than 4½*d.* ſterling).

Baron DE THIBOUT,
Colonel.

HEERDAN,
Councillor of War.

MUNICH,
1ſt September 1795.

N° V.

Printed Form for the DESCRIPTIONS *of the* POOR.

Deſcription of the Poor Perſon, N°

Name

Deſcribed MUNICH, *the th of* 179

AGE Years. Stature Feet Inches.
Bodily Structure Hair
Eye Complexion
Bodily Defects
Other particular Marks
State of Health
Place of Nativity
Lives here ſince
Came here from In what Manner
Profeſſion Religion
Quality Family
Supports himſelf, at preſent, by
Lives at preſent Quarter, Diſtrict, Street,
Houſe, N° Floor,
Can be conſidered as a Pauper belonging to this City, and ought therefore to be

Is

Is capable of doing the following Work:
Could be trained to the following Occupations:

	fl.	kr.
Could gain by this Work *per* Week - -		
Wants for his weekly Support - - - -		
Receives at preſent *per* Week from his own Means, gets by ways of Penſion, Alms, and - - - - - - - -		
Wants, therefore, a weekly Allowance of Alms of		

		fl.	kr.
Enjoyed heretofore *per* Week	Income of his own - -		
	Earned by working - -		
	Salary - - - - - - -		
	Penſion - - - - - -		
	Alms: From the Court		
	Alms: From the City		
	Alms: From private Perſons		
	Got by begging - - -		
	Total		

	fl.	kr.
Pays Houſe-rent - - - - -		
Has Bed of his own, the Value of which is about - - - - -		
Poſſeſſes other Utenſils neceſſary for Houſe-keeping, worth about - -		
Is provided with the following working Tools:		

Can

Can work at Home
Could be employed in the Military Workhouſe
Is provided with Raiment, and wants
Articles of Apparel
Life and Conduct, according to the Information received
Is given to and
Is known to have committed Crimes
and has appeared before the Magiſtrates
How long he lives in his preſent Habitation
Year Month Weeks
Name and Reſidence of his preſent Landlord
Where he lived before, and how long

Other Remarks.

Has been ſettled here
Received a Licence to marry, from
Poſſeſſed or received, when married
Value about fl. kr.
Was reduced to Poverty by
Is poor and in want, ſince
Could not extricate himſelf from his Difficulties, becauſe

N. B. *This Form is printed on a Half-ſheet of ſtrong Writing Paper, folded together ſo as to make two Leaves in Quarto; each Leaf being* 8 *Inches high, and* 6½ *Inches wide.*

N° VI.

Printed Form for SPIN-TICKETS, *ſuch as are uſed at the Military Workhouſe at* MUNICH.

Munich Military Workhouſe,
179 the N°
received
lb. of
Delivered back ſkains knots
of weighing lb. oz.
Is entitled to receive *per* xrs.
TOTAL,
Atteſt. this 179

This printed Form is filled up as follows:

Munich Military Workhouſe,
1795, the *1ſt Sept.* N° 134.
Mary Smith received
1 lb. of *Flax*, *N°* 3,
Delivered back 2 ſkains 3 knots
of *Thread*, weighing 1 lb.—oz.
Is entitled to receive per *lb.* xrs. 10.
Total, *ten creutzers.*
Atteſt. this *4th Sept.* 1795.
WILL. WILDMANN.

An

An improved Form for a SPIN-TICKET, *with its* Abſtract; *which Abſtract is to be cut off from the Ticket, and faſtened to the Bundle of Yarn or Thread.*

SPIN-TICKET.	Abſtract of SPIN-TICKET.
Munich Houſe of Induſtry.	Munich Houſe of Induſtry.
1795 the *10th Sept.* N° 230.	1795, the *10th Sept.* N° 230.
Mary Smith received 1 lb. of *wool*, N° 14.	2 ſkains 4 knots of *woollen yarn*, weighing 1 lb.—oz.
Delivered back 2 ſkains 4 knots of *yarn*, weighing 1 lb.—oz.	Spinner, *Mary Smith.*
Wages per *lb.* for ſpinning 12 xrs.	Atteſt. J. Schmidt.
Is entitled to receive *twelve* xrs.	
Atteſt, this *14th* of *Sept.* 1795. J. Schmidt.	

In order that the original entry of the Spin-Tickets in the general tables, kept by the clerks of the Spinners, may more readily be found, all the Tickets for the ſame material, (flax, for inſtance,) iſſued by the ſame clerk, during the courſe of each month, muſt be regularly numbered.

N° VII.

An Account of EXPERIMENTS *made at the* BAKE-HOUSE *of the* MILITARY WORKHOUSE *at* MUNICH, November *the 4th and 5th*, 1794.

In baking RYE BREAD.

☞ *The oven, which is of an oval form, is* 12 *feet deep, measured from the mouth to the end;* 11 *feet* 10 *inches wide, and* 1 *foot* 11 *inches high, in the middle.*

NOVEMBER 4th, at 10 o'clock in the morning, 1736 lbs. * of rye meal were taken out of the ſtore room, and ſent to the bakehouſe, where it was worked and baked into bread, at ſix different times, in the following manner:—

FIRST BATCH.

At 45 minutes after ten o'clock, the meal was mixed for the firſt time, for which purpoſe 16 quarts (Bavarian meaſure) of lukewarm water, weighing 28 lbs. 28 loths, were uſed.

At 3 o'clock in the afternoon, the *little leaven* (as it is called) was made, for which purpoſe 24 quarts, or 43 lbs. 10 loths, of water were uſed; and at half an hour after 7 o'clock, the *great leaven*

* The Bavarian pound which was uſed in theſe experiments, and which is divided into 32 *loths*, is to the pound Avoirdupois as 12,384 is to 10,000,—or nearly as 5 to 4.

was

was made with 40 quarts, or 72 lbs. 6 loths, of water. At 11 o'clock this mass was prepared for kneading, by the addition of 40 quarts, or 72 lbs. 6 loths, more of water.

At 15 minutes after 10 o'clock at night, the kneading of the dough was commenced; 2¼ lbs. of salt being first mixed with the mass. The dough having been suffered to rise till a quarter before 2 o'clock, it was kneaded a second time, and then made, in half an hour's time, into 191 loaves, each of them weighing 2 lbs. 16 loths. These loaves having been suffered to rise half an hour, they were put into the oven 10 minutes before 3 o'clock, and in an hour after taken out again, when 25 loaves being immediately weighed, were found to weigh 55 lbs. 15 loths. Each loaf, therefore, when baked, weighed 2 lbs. 5½ loths; and as it weighed 2 lbs. 16 loths when it was put into the oven, it lost 10½ loths in being baked.

The whole quantity of water used in this experiment, in making the leaven and the dough, was 216 lbs. 18 loths.—The quantity of meal used was about 310 lbs.

First Heating of the Oven.

This was begun 35 minutes after four o'clock, with 220½ lbs. of pine-wood, which was in full flame 15 minutes after 5 o'clock.—At 8 minutes after 8 o'clock, 51 lbs. more of wood were added;—12 minutes after 11 o'clock, 32 lbs. more were put into the oven;—51 lbs. at 1 o'clock, and 12 lbs. more at 30 minutes after 2

o'clock; ſo that 366 lbs. 16 loths of wood were uſed for the firſt heating.

Second Batch.

At 20 minutes after 11 o'clock, the proper quantity of leaven was mixed with the meal, and 44 quarts, or 79 lbs. 25 loths, of water added to it. At 10 minutes after 3 o'clock, the meal was prepared for kneading, by adding to it 52 quarts, or 93 lbs. 27 loths, of water.

At 30 minutes after 5 o'clock, the kneading of the dough was begun; 2½ lbs. of ſalt having been previouſly added. At 15 minutes after 6 o'clock, the dough was kneaded a ſecond time, and formed into 186 loaves, which were put into the oven at 15 minutes after 7 o'clock, and taken out again 9 minutes after 8 o'clock, when 25 loaves being immediately weighed, were found to weigh 55 lbs. 4 loths.—Water uſed in making the ſecond dough, 173 lbs. 8 loths.

Second Heating of the Oven.

This was begun 20 minutes after 4 o'clock in the morning, with 54½ lbs. of wood; 20 lbs. were added 10 minutes after 5 o'clock, and 60 lbs. more 6 minutes after 6 o'clock; ſo that the ſecond heating of the oven required 134 lbs. 16 loths of wood.

Third Batch.

At 20 minutes after 3 o'clock, the proper quantity of leaven was mixed with the meal, and 48 quarts, or 86 lbs. 20 loths, of water were put to it.

At

At 6 minutes after 8 o'clock, this maſs was prepared for kneading, by adding to it 48 quarts, or 86 lbs. 20 loths, of water.—At 30 minutes after 9 o'clock, this dough was mixed with 2½ lbs. of ſalt; and at 30 minutes after 10 o'clock it was made into 189 loaves, which, after having been ſuffered to riſe for half an hour, were put into the oven 10 minutes after 11 o'clock, and taken out again at 12 o'clock.

Fifty loaves of bread, which were weighed immediately upon their being taken out of the oven, were found to weigh 110 lbs. 30 loths; which gives 2 lbs. 5½ loths for the weight of each loaf. The water uſed in making this batch of bread was 173 lbs. 8 loths.

Third Heating of the Oven.

This was begun 30 minutes after 8 o'clock, with 50 lbs. of wood; and 50 lbs. more being added 30 minutes after 9 o'clock, the whole quantity uſed was 100 lbs.

FOURTH BATCH.

At a quarter before 8 o'clock, the proper quantity of leaven was mixed with the meal, and 48 quarts, or 86 lbs. 20 loths, of water being added, at 30 minutes paſt 11 o'clock, this maſs was prepared for kneading, by adding to it 52 quarts, or 93 lbs. 27 loths, of water.

Four minutes after 1 o'clock, 2½ lbs. of ſalt were added. The dough being kneaded at 15 minutes

after 2 o'clock, 188 loaves of bread were made, which were put into the oven 5 minutes before 3 o'clock, and taken out again at the end of one hour, when 25 of them were weighed, and found to weigh, one with the other, 2 lbs. 5¼ loths.

The water uſed in making this batch of bread was 180 lbs. 15 loths.

Fourth Heating of the Oven.

This was begun 15 minutes after 12 o'clock, with 40 lbs. of wood, and 50 lbs. more being added at 30 minutes after 1 o'clock, the total quantity uſed was 90 lbs.

FIFTH BATCH.

At ¼ before 12 o'clock, the proper quantity of leaven was mixed with the meal, and 52 quarts, or 93 lbs. 27 loths, of water put to it.—This maſs was prepared for kneading at 15 minutes after 4 o'clock, by the addition of 48 quarts, or 86 lbs. 20 loths, of water. The kneading of the dough was begun at 5 o'clock, and at 30 minutes after 5 it was made into loaves, 2¼ lbs. of ſalt having been previouſly added. 186 loaves being made out of this dough, they were put into the oven at 10 minutes before 7 o'clock, and taken out again at the end of one hour, when 25 loaves were weighed, and found to weigh 55 lbs. 18 loths.—The quantity of water uſed in making the dough for this batch of bread was 180 lbs. 15 loths.

Fifth

Fifth Heating of the Oven.

The oven was begun to be heated the fifth time at 15 minutes after 4 o'clock, with 40 lbs. of wood, and 40 lbs. more were added at 6 o'clock; ſo that in this heating no more than 80 lbs. of wood were conſumed.

SIXTH BATCH.

The meal was mixed with leaven at 30 minutes after 3 o'clock; for which purpoſe 32 quarts, or 57 lbs. 24 loths, of water were uſed at 15 minutes after 7 o'clock. This maſs was prepared for kneading, by the addition of 44 quarts, or 79 lbs. 13 loths, of water, and a proportion of ſalt; at 19 minutes after 9 o'clock the dough was kneaded the firſt, and at ¼ before 10 the ſecond time; and in the courſe of half an hour 160 loaves were made out of it, which were put into the oven at 10 minutes before 11 o'clock, and taken out again at 8 minutes before 12 o'clock at midnight.

The water uſed in making the dough for this batch of bread was 137 lbs. 5 loths.

Sixth Heating of the Oven.

At ¼ after 8 o'clock, the ſixth and laſt fire was made with 40 lbs. of wood; to which, at 15 minutes before 10 o'clock at night, 34½ lbs. more were added; ſo that in the laſt heating 74½ lbs. of wood only were conſumed.

General Results *of theſe* Experiments.

The ingredients employed in making the bread in theſe ſix experiments were as follows: *viz.*

	lbs.	loths.
Of rye meal, - -	1736	0
Of water, - - -	1061	5
Of ſalt, - - -	15	0
In all,	2812	5 in weight.

Of this maſs 1102 loaves of bread were formed, each of which, before it was baked, weighed $2\frac{1}{2}$ lbs.; conſequently, theſe 1102 loaves, before they were put into the oven, weighed 2755 lbs.: but the ingredients uſed in making them weighed 2812 lbs. 5 loths. Hence it appears, that the loſs of weight in theſe ſix experiments, in preparing the leaven, from evaporation, before the bread was put into the oven,—from waſte, &c.—amounted to no leſs than 57 lbs. 5 loths.

In ſubſequent experiments, where leſs water was uſed, this loſs appeared to be leſs by more than one half.

In theſe experiments 1061 lbs. 5 loths of water were uſed to 1736 lbs. of meal, which gives 61 lbs. $4\frac{1}{2}$ loths of water to 100 lbs. of meal. But ſubſequent experiments ſhowed 56 lbs. of water to be quite ſufficient for 100 lbs. of the meal.

Theſe

Theſe 1102 loaves, when baked, weighed at a medium 2 lbs. $5\frac{1}{2}$ loths each; conſequently, taken together, they weighed 2393 lbs. 13 loths: and as they weighed 2755 lbs. when they were put into the oven, they muſt have loſt 361 lbs. 19 loths in being baked, which gives $10\frac{1}{2}$ loths, equal to $\frac{21}{160}$ or nearly $\frac{1}{7}$ of its original weight before it was baked, for the diminution of the weight of each loaf.

According to the ſtanding regulations of the baking buſineſs carried on in the bakehouſe of the Military Workhouſe at Munich, for each 100 lbs. of rye meal which the baker receives from the ſtore-keeper, he is obliged to deliver 139 lbs. of well-baked bread; namely, 64 loaves, each weighing 2 lbs. $5\frac{1}{2}$ loths. And as in the before-mentioned ſix experiments, 1736 lbs. of meal were uſed, it is evident that 1111 loaves, inſtead of 1102 loaves, ought to have been produced; for 100 lbs. of meal are to 64 loaves as 1736 lbs. to 1111 loaves. Hence it appears that 9 loaves leſs were produced in theſe experiments than ought to have been produced.

There were reaſons to ſuſpect that this was ſo contrived by the baker, with a deſign to get the number of loaves he was obliged to deliver for each 100 lbs. of meal leſſened;—but in this attempt he did not ſucceed.

Quantity of FUEL *conſumed in theſe Experiments.*

	Dry pine-wood. lbs.	loths.
In heating the oven firſt time,	366	16
ſecond time,	134	16
third time	100	0
fourth time,	90	0
fifth time	80	0
ſixth time,	74	16
Total,	845	16
Employed in keeping up a ſmall fire near the mouth of the oven while the bread was putting into it,	34	16
Total conſumption of wood in the ſix experiments,	880 lbs.	

The reſults of theſe experiments ſhew, in a ſtriking manner, how important it is to the ſaving of fuel in baking bread, *to keep the oven continually going*, without ever letting it cool: for in the firſt experiment when the oven was cold, when it was begun to be heated, the quantity of wood required to heat it was 366½ lbs.; but in the ſixth experiment, after the oven had been well warmed in the preceding experiments, the quantity of fuel required was only 74½ lbs.

As in theſe experiments 2393 lbs. 13 loths of bread were baked with the heat generated in the combuſtion

tion of 880 lbs. of wood, this gives to each pound of bread 11$\frac{1}{3}$ loths, or $\frac{3}{5}\frac{4}{6}$ of a pound, of wood.

In the fifth experiment, or batch, 186 loaves weighing (at 2 lb. 5$\frac{1}{2}$ loths each) 304 lbs. were baked, and only 80 lbs. of wood conſumed, which gives but a trifle more than $\frac{1}{4}$ of a pound of wood to each pound of bread; or 1 pound of wood to 4 pounds of bread.

As each loaf weighed 2 lbs. 16 loths when it was put into the oven, and only 2 lbs. 5$\frac{1}{2}$ loths when it came out of it, the loſs of weight each loaf ſuſtained in being baked was 10$\frac{1}{2}$ loths, as has already been obſerved. Now this loſs of weight could only ariſe from the evaporation of the ſuperabundant water exiſting in the dough; and as it is known how much heat, and conſequently *how much fuel* is required to reduce any given quantity of water, at any given temperature, to ſteam, it is poſſible, from theſe data, to determine how much fuel would be required to bake any given quantity of bread, upon the ſuppoſition that *no part of the heat generated in the combuſtion of the fuel was loſt*, either in heating the apparatus, or in any other way; but that the whole of it was employed in baking the bread, and in that proceſs alone. And though theſe computations will not ſhow how the heat which is loſt might be ſaved, yet, as they aſcertain what the amount of this loſs really is in any given caſe, they enable us to determine, with a conſiderable degree of preciſion, not only the relative merit of different arrangements for economizing fuel in the proceſs of baking, but they ſhow alſo, at the ſame time, the preciſe diſtance

of

of each from that point of perfection, where any farther improvements would be impoſſible: And on that account, theſe computations are certainly intereſting.

In computing how much heat is *neceſſary* to bake any given quantity of bread, it will tend much to ſimplify the inveſtigation, if we conſider the loaf as being firſt heated to the temperature of boiling water, and then baked in conſequence of its redundant water being ſent off from it in ſteam.

But as the dough is compoſed of two different ſubſtances, *viz.* rye meal, and water, and as theſe ſubſtances have been found by experiment to contain different quantities of abſolute heat; or, in other words, to require different quantities of heat, to heat equal quantities or weights of them to any given temperature, or any given number of degrees, it will be neceſſary to determine how much of each of theſe ingredients is employed in forming any given quantity of dough.

Now, in the foregoing experiments, as 1102 loaves of bread were formed of 1736 lbs. of rye meal, it appears, that there muſt have been $1\frac{47}{100}$ lb. of the meal in each loaf; and as theſe loaves weighed $2\frac{1}{2}$ lbs. each when they were put into the oven, each of them muſt, in a ſtate of dough, have been compoſed of $1\frac{47}{100}$ lb. of rye meal, and $1\frac{3}{100}$ lb. of water.

Suppoſing theſe loaves to have been at the temperature of 55° Fahrenheit's Thermometer when they were put into the oven, the heat neceſſary to heat

heat one of them to the temperature of 212°, or the point of boiling water, may be thus computed.

By an experiment, of which I intend hereafter to give an account to the Public, I found, that 20 lbs. of ice-cold water might be made to boil, with the heat generated in the combuſtion of 1 lb. of dry pine-wood, ſuch as was uſed in baking the bread in the ſix experiments before-mentioned*. Now, if 20 lbs. of water may be heated 180 degrees, (namely from 32° to 212°,) by the heat generated in the combuſtion of 1 lb. of wood, $1\frac{3}{100}$ lb. of water may be heated 157 degrees, (from 55°, or temperature, to 212°,) with $\frac{4}{100}\frac{4}{000}\frac{3}{000}\frac{6}{000}$ of a pound of the wood.

Suppoſe now that rye meal contained the ſame quantity of abſolute heat as water,—as the quantity of meal in each loaf was $1\frac{47}{100}$ lb., it appears, that this quantity would have required, (upon the above ſuppoſition,) to heat it from the temperature of 55°, to that of 212°; a quantity of heat equal to that which would be generated in the combuſtion of $\frac{6}{100}\frac{4}{000}\frac{0}{000}\frac{5}{000}$ of a pound of the wood in queſtion.

But it appears, by the reſult of experiments publiſhed by Dr. Crawford, that the quantities of heat required to heat any number of degrees, the ſame given quantity (in weight) of water and of wheat, (and it is preſumed, that the ſpecific or abſolute heat of rye cannot be very different from that of wheat,) are to each other, as $2\frac{9}{100}$ to 1,—water requiring more heat to heat it, than the grain in that

* An account of this experiment has ſince been publiſhed in my Sixth Eſſay.

proportion:

proportion: Conſequently, the quantity of wood required to heat from 55° to 212°, the $1\frac{47}{100}$ lb. of rye meal which enters into the compoſition of each loaf, inſtead of being $\frac{6405}{100000}$ of a pound, as above determined, upon the falſe ſuppoſition that the ſpecific heat of water and of rye were the ſame, would, in fact, amount to no more than $\frac{2899}{100000}$; for $2\frac{9}{10}$ (the ſpecific heat of water) is to 1 (the ſpecific heat of rye) as $\frac{6405}{100000}$ is to $\frac{2899}{100000}$.

Hence it appears, that the wood required as fuel to heat (from the temperature of 55° to that of 212°) a loaf of rye bread (in the ſtate of dough), weighing $2\frac{5}{8}$ lbs., would be as follows, namely:

	Of pine-wood.
To heat $1\frac{3}{100}$ lb. of water, which enters into the compoſition of the dough,	$\frac{4436}{100000}$
To heat the rye meal, $1\frac{47}{100}$ lb. in weight,	$\frac{2899}{100000}$
Total,	$\frac{7335}{100000}$ lb.

To complete the computation of the quantity of fuel neceſſary in the proceſs of baking bread, it remains to determine, how much heat is required, to ſend off in ſteam, from one of the loaves in queſtion (after it has been heated to the temperature of 212°), the $10\frac{1}{2}$ loths, equal to $\frac{21}{64}$ of a pound of water, which each loaf is known to loſe in being baked.

Now it appears, from the reſult of Mr. Watt's ingenious experiments on the quantity of latent heat in ſteam, that the quantity of heat neceſſary

to change any given quantity of water *already boiling hot* to ſteam, is about five times and a half greater than would be ſufficient to heat the ſame quantity of water, from the temperature of freezing, to that of boiling water.

But we have juſt obſerved, that 20 lbs. of ice-cold water may be heated to the boiling point, with the heat generated in the combuſtion of 1 lb. of pine-wood; it appears therefore that 20 lbs. of boiling water would require $5\frac{1}{2}$ times as much, or $5\frac{1}{2}$ lbs. of wood to reduce it to ſteam.

And if 20 lbs. of boiling water require $5\frac{1}{2}$ lbs. of wood, $\frac{21}{64}$ of a pound of water boiling hot will require $\frac{90231}{1000000}$ of a pound of wood to reduce it to ſteam.

	Of pine-wood.
If now, to this quantity of fuel, -	$\frac{90231}{1000000}$ lb.
we add that neceſſary for heating the loaf to the temperature of boiling water, as above determined, - -	$\frac{73335}{1000000}$ lb.
this gives the total quantity of fuel neceſſary for baking one of theſe loaves of bread, - - -	$\frac{163566}{1000000}$ lb.

Now as theſe loaves, when baked into bread, weighed 2 lbs. $5\frac{1}{2}$ loths $= 2\frac{11}{64}$ lbs. each, and required, in being baked, the conſumption of $\frac{163588}{1000000}$ of a pound of wood, this gives for the expence of fuel in making bread $\frac{75532}{800000}$ of a pound of pine-wood to each pound of rye bread; which is about $13\frac{1}{4}$ lbs. of bread to each pound of wood.

But

But we have ſeen, from the reſults of the beforementioned experiments, that when the bread was baked under circumſtances the moſt favourable to the economy of fuel, no leſs than 80 lbs. of pine-wood were employed in heating the oven to bake 304 lbs. of bread, which gives leſs than 4 lbs. of bread to each pound of wood; conſequently *two thirds* at leaſt of the heat generated in the combuſtion of the fuel muſt, in that caſe, have been loſt; and in all the other experiments the loſs of heat appears to have been ſtill much greater.

A conſiderable loſs of heat in baking will always be inevitable; but it ſeems probable, that this loſs might, with proper attention to the conſtruction of the oven, and to the management of the fire, be reduced at leaſt to one half the quantity generated from the fuel in its combuſtion. In the manner in which the baking buſineſs is now generally carried on, much more than three quarters of the heat generated, or which might be generated from the fuel conſumed, is loſt.

N° VIII.

THE following Account of the Perſons in the HOUSE of INDUSTRY in DUBLIN, the 30th of April 1796, and of the Details of the Manner and Expence of feeding them, was given to the Author, by order of the Governors of that Inſtitution.

Average of the Deſcription of Poor *for the Week ending 30th of April* 1796.

	Males.	Females.	Total.
Employed - -	74	352	426
Infirm and Incurable -	172	585	757
Idiots - - -	16	13	29
Blind - - -	5	10	15
	267	960	1227
In the INFIRMARY.			
Sick Patients, Servants, &c.	88	200	343
Lunaticks - - -	15	40	
		Total	1570

Employed at actual labour 322 Perſons.
Ditto at menial offices - 104 ditto.

Total 426

Amongſt the 1570 Perſons above mentioned, are 282 Children and 447 compelled Perſons.

Of the Children, 205 are taught to ſpell, read, and write.

Saturday, April 30, 1796.

1227 Perſons fed at Breakfaſt.

		lbs.	loaves.	lb.	value.
120 Servants in New-Houſe, *a* 8 oz. bread - 60		186	is 41	1½	£. 1 14
336 Incurables, Children, &c. *a* 6 ditto - - 126					
771 Workers, &c. got Stir-about.					
1227					

Weight of meal for Stirabout 4 ewt. coſts £. 3 1 8

	Gal. P.	
120 Servants in New-Houſe get 1 quart butter-milk each - -	30 0	167 gallons of butter-milk, value 1*l.*
1084 Workers, Incurables, &c. 1 pint ditto - -	135 4	
23 Sucklers get no butter-milk		
Allowed for waſte -	1 4	
1227		

		s.	d.		
	Brought down			£. 5	15 8
Fuel to cook the Stirabout, 3 buſh. coſt		2	3	0	3 0½
Salt for ditto, 1 qr. 3 lb. coſt -		0	9½		
	The Breakfaſt coſt			£. 5	18 8½

Quantity of water, 5 barrels 6 gallons.

1227 *Perſons fed at Dinner.*—BREAD *and* MEAL POTTAGE.

		lbs.	lbs.	loaves.	lb.		value.		
120	Servants *a* 9 oz. bread -	68	621½	is 138	0½	£.	5	10	4
1107	Workers, Incurables, &c. 8oz. ditto -	553½							
Weight of meal for the pottage, 1 cwt. 3 qrs.							0	13	5
Pepper for ditto, half a pound - -							0	1	1
Ginger for ditto, 1 pound - - -							0	1	3
Salt for ditto, 21 pound - - -							0	0	7
Fuel for ditto, 3 buſhels 2 pecks - -							0	2	7½
						Dinner coſt £.	6	9	3½

SUPPER.

		lbs.	lbs.	loaves.	lb.		value.		
For 165	Sickly Women on 6 oz. bread.	62	109	is 24	1	£.	0	19	11
251	Children, 3oz. do.	47							

N. B. The expences of Food for the Hoſpital, in which there are 343 perſons, is not included in the above account.

Sunday, May 1, 1796.

1220 Perſons fed at Breakfaſt.

120 Servants, *a* 8 oz. bread.
330 Incurables, Children, &c. 6 oz. do.
770 Workers, &c. get Stirabout.

1220

The ſame quantity of proviſions delivered this day for Breakfaſt as on Saturday, and coſt the ſame: viz. 5*l.* 18*s.* 8½*d.*

1220 *Perſons fed at Dinner.*—BREAD, BEEF, *and* BROTH.

					Coſt		
120 Servants, *a* 9 oz. bread, -	68	lbs.	loaves.	lbs.	l.	s.	d.
1100 Workers, Incurables, &c. 8 do.	550	618	is 137	1½	5	9	6

1220 Perſons

	Cwt.	qrs.	lbs.		l.	s.	d.
Weight of raw beef,	4	2	10				
Allowed for bone, -	1	0	0				
	5	2	10	-	7	19	3
Meal for the broth,	1	2	0	-	1	3	1½
Waſte bread for do.	1	0	0	-	0	0	0
Salt for do.	0	0	24	-	0	0	8
Pepper for do.	0	0	0½	-	0	1	1
Fuel, 4 buſhels 2 pecks,		-		-	0	3	4½
				Total £.	14	17	0

SUPPER.

The ſame number of women and children as yeſterday, and the Supper coſt the ſame: viz. 19*s.* 11*d.*

Wedneſday, May 4, 1796.

1216 Perſons fed at Breakfaſt.

120 Servants in New-Houſe, *a* 8 oz. bread.
334 Incurables, Children, &c. *a* 6 oz. do.
762 Workers, &c. get Stirabout.

1216 Perſons.

The ſame quantity of proviſions, &c. delivered this day for Breakfaſt as for Saturday, and coſt the ſame: viz. 5*l.* 18*s.* 8½*d.*

1216 *Perſons fed at Dinner.*—CALECANNON *and* BEER.

	Cwt.	qrs.	lbs.		Coſt l.	s	d.
Weight of raw potatoes for Calecannon,	19	0	0	-	3	6	6
An allowance for waſte,	1	0	0				
Weight uſed,	18	0	0				
Raw greens for ditto, -	8	0	0	-	1	6	0
Butter for ditto, - -	1	0	0	-	3	12	0
Pepper for ditto, - -	0	0	0½	-	0	1	1
Ginger for ditto, - -	0	0	1	-	0	1	3
Onions for ditto, - -	0	0	14	-	0	2	0
Salt for ditto, - -	0	0	24	-	0	0	8
Fuel, 4 buſhels 2 pecks,	-		-	-	0	3	4

Time of boiling about four hours.

		Galls.	Barrs.	Galls.			
1193 Perſons get 1 pint of beer each, making	Galls. p. 149 1						
23 On the breaſt get no beer.							
1216							
Allowed for waſte,	1 7						
		151	18	3	31	2	5 3
Bread to Incurables and Children on the breaſt, 43 loaves,						1	15 4
					Total £.	12	13 5

SUPPER.

The ſame number of Women and Children as on Saturday, and coſt the ſame: viz. 19*s.* 11*d.*

N. B. All theſe accounts are in Avoirdupois weight, and Iriſh money.

N° IX.

An Account of an EXPERIMENT *made (under the Direction of the* AUTHOR) *in the Kitchen of the* HOUSE *of* INDUSTRY *at* DUBLIN, *in* COOKING *for the* POOR.

MAY the 6th, 1796, a dinner was provided for 927 perſons of *Calecannon*, a kind of food in great repute in Ireland, compoſed of *Potatoes*, boiled and maſhed, mixed with about one-fifth of their weight of boiled *Greens*, cut fine with ſharp ſhovels, and ſeaſoned with *butter*, *onions*, *ſalt*, *pepper*, and *ginger*. The ingredients were boiled in a very large iron boiler, of a circular, or rather hemiſpherical form, capable of containing near 400 gallons, and remarkably thick and heavy. 273 gallons of pump water were put into this boiler; and the following Table will ſhow, in a ſatisfactory manner, the progreſs and the reſult of the experiment:

Time.		Fuel laid on. Coals.		Heat of the Liquid.	Contents of the Boiler.		
						Quantity.	
Hours.	Minutes.	Pecks.	Weight.		Ingredients.	in measures.	in weight.
7	48	4	106 lb.	55°	*Water* to boil the Greens and Potatoes.	Gall. 273	lbs.
8	15	1	26½				
—	40	1	26½				
9	—	1	26½				
—	15	2	53	80°			
—	30	1	26½	90°			
—	45	2	53	110°			
10	—	1	26½	150°			
—	20	—	—	212°	The *Greens* were now put in.		295½
—	2	—	—	180°			
—	30	1	26½	190°			
—	45	—	—	212°			
11	—	—	—	—	The Greens taken out and *Potatoes* put in.		1615
11	10	2	53	180°			
—	20	1	26½	200°			
—	30	—	—	212°			
—	45	—	—	—	Potatoes done.		

GENERAL

GENERAL RESULTS *of the* EXPERIMENT.

The fuel uſed was Whitehaven coal: the quantity 17 pecks, weighing 450½ lbs.

The potatoes being maſhed, (without peeling them,) and the greens chopped fine with a ſharp ſhovel, they were mixed together, and 98 lbs. of butter, 14 lbs. of onions boiled and chopped fine, 40 lbs. of ſalt, 1 lb. of black pepper in powder, and ½ lb. of ginger, being added, and the whole well mixed together, this food was ſerved out in portions of 1 quart, or about 2 lbs. each, in wooden noggins, holding each 1 quart when full.

Each of theſe portions of Calecannon (as this food is called in Ireland) ſerved one perſon for dinner and ſupper; and each portion coſt about 2$\frac{1}{14}$ pence Iriſh money, or it coſt ſomething leſs than *one penny* ſterling per pound.

Twelve pence ſterling, make thirteen pence Iriſh.

The expence (reckoned in Iriſh money) of preparing this food, was as follows: viz.

	l.	s.	d.
Potatoes, 19 cwt. at 3*s.* 6*d.* per cwt. (N. B. *They weighed no more than* 1615 *lbs. when picked and waſhed.*)	3	6	6
Greens, 26 flaſkets, at 10*d.* each, -	1	1	10
Butter, 98 lbs. at 72*s.* per cwt. -	3	3	0
Onions, 14 lbs. at 2*s.* per ſtone, -	0	2	0
Carried forward,	£. 7	13	4

Brought

	l.	s.	d.
Brought forward,	7	13	4
Ginger, ½ lb. - - - -	0	1	3
Salt, 40 lbs. - - - -	0	1	1
Pepper, 1 lb. - - - -	0	1	1
Total coſt of the ingredients, £.	7	16	9
Expence for fuel, 17 pecks of coals, at 1*l.* 3*s.* 3*d.* per ton,	0	3	2½
Total £.	7	19	11½

With this kind of food there is no allowance of bread, nor is any neceſſary.

It would be hardly poſſible to invent a more nouriſhing or more palatable kind of food, than Calecannon, as it is made in Ireland; but the expence of it might be conſiderably diminiſhed, by uſing leſs butter in preparing it.

Salted herrings (which do not in general coſt much more than a penny the pound) might be uſed with great advantage to give it a reliſh, particularly when a ſmall proportion of butter is uſed.

In this experiment, 273 gallons of water, weighing about 2224 lbs. Avoirdupois, and being at the temperature of 55°, was made to boil, (in two hours and 32 minutes,) with the combuſtion of 346½ lbs. of coal; which gives rather leſs than 6¼ lbs. of water, to each pound of coal conſumed; the water being heated 157 degrees, or from 55° to 212°.

According to my experiments, 20 lbs. of water may be heated 180 degrees, (namely, from 32° the freezing

freezing point, to 212° the temperature of boiling water,)with the heat generated in the combuſtion of 1 lb. of pine-wood; conſequently the ſame quantity of wood (1 lb.) would heat 23 lbs. of water 157°, or from 55° to 212°.

But Mr. Lavoiſier has ſhown us by his experiments, that the quantity of heat generated in the combuſtion of any given weight of coal, is greater than that generated in the combuſtion of the ſame weight of dry wood, in the proportion of 1089 to 600; conſequently, 1 lb. of coal ought to make 40¼ lbs. of water, at the temperature of 55°, boil.

But in the foregoing experiment, 1 lb. of coal was conſumed in making 6½ lbs. of water boil; conſequently, more than $\frac{5}{6}$ of the heat generated, or which might with proper management have been generated in the combuſtion of the coal, was loſt, owing to the bad conſtruction of the boiler and of the fire-place.

Had the conſtruction of the boiler and of the fire-place been as perfect as they were in my experiments, a quantity of fuel would have been ſufficient, ſmaller than that actually uſed, in the proportion of 6½ to 40¼, or inſtead of 450½ lbs. of coal, 71¼ lbs. would have done the buſineſs; and, inſtead of coſting 3*s.* 2½*d.*, they would have coſt leſs than 6½*d.* Iriſh money, or 5¼*d.* ſterling, which is only about $\frac{1}{3}$ per cent of the coſt of the ingredients uſed in preparing the food, for the expence of fuel for cooking it.

Theſe computations may ſerve to ſhow, that I did not exaggerate, when I gave it as my opinion, (in my Eſſay on Food,) that the expence for the fuel neceſſary

ceſſary to be employed in cooking ought never to exceed, even in this country, *two per Cent.* of the value of the ingredients of which the food is compoſed; that is to ſay, when kitchen fire-places are well conſtructed.

Had the ingredients uſed in this experiment, viz.

2234	lbs. of water,
1615	lbs. of potatoes,
98	lbs. of butter,
14	lbs. of onions,
40	lbs. of ſalt,
1	lb. of pepper, and
0½	lb. of ginger,

making in all 3992½ lbs., been made into a ſoup, inſtead of being made into Calecannon, this, at 1¼ lb. (equal to one pint and a quarter), the portion would have ſerved to feed 3210 perſons.

But if I can ſhow, that in Ireland, where all the coals they burn are imported from England, a good and ſufficient meal of victuals for 3210 perſons may be provided with the expence of only 5½*d.* for the fuel neceſſary to cook it, I truſt that the account I ventured to publiſh in my Firſt Eſſay, of the expence for fuel in the Kitchen of the Military Workhouſe at Munich, namely, that it did not amount to ſo much as 4½*d.* a-day, when 1000 perſons were fed, will no longer appear quite ſo incredible, as it certainly muſt appear to thoſe who are not aware of the enormous waſte which is made of fuel in the various proceſſes in which it is employed.

I ſhall

I ſhall think myſelf very fortunate, if what I have done in the proſecution of theſe my favourite ſtudies, ſhould induce ingenious men to turn their attention to the inveſtigation of a ſcience, hitherto much neglected, and where every new improvement muſt tend directly and powerfully to increaſe the comforts and enjoyments of mankind.

END OF THE FIRST VOLUME.

Printed by A. Strahan, Printers Street, London.